

**MODAL COUPLING PROCEDURES ADAPTED TO NASTRAN  
ANALYSIS OF THE 1/8-SCALE SHUTTLE STRUCTURAL  
DYNAMICS MODEL**

**Volume II — Supporting Data**

Prepared Under Contract NAS 1-10635-21

for the

Langley Research Center  
National Aeronautics and Space Administration  
Hampton, Virginia 23665

by

J. Zalesak

Grumman Aerospace Corporation  
Bethpage, New York 11714

July 1975

# VOLUME I CONTENTS

	<u>Page</u>
Introduction . . . . .	1
Orbiter Finite Element Model. . . . .	7
Substructuring Procedure . . . . .	8
Results and Discussion . . . . .	12
• Phase I Component Modes Results	
• Final System Orbiter Results (Symmetric Modes)	
Computing Time . . . . .	47
Observations and Recommendations . . . . .	50
References . . . . .	53
 <u>Appendixes</u>	
A NASTRAN Component Modes Analysis General Theory . . . . .	A-1
B1 NASTRAN Component Modes Analysis - Alters to Rigid Format 3; Phases 1, 2, and 3 . . . . .	B1-1
B2 Phase 1, 2 & 3 Alters to Rigid Format 3 - Component Modes, Sub- structuring Analysis Modified Subroutine GPWG . . . . .	B2-1
B3 Input Bulk Data/Phase 1 Analysis: Model II Fuselage. . . . .	B3-1

# VOLUME I ILLUSTRATIONS

<u>Figure</u>		<u>Page</u>
1	Assembled 1/8-Scale Shuttle Model (View Looking Down) . . . . .	3
2	Assembled 1/8-Scale Shuttle Model (Side View) . . . . .	4
3	Flow Diagram for Nastran Substructuring (Component Modes Method) to Obtain Orbiter Normal Modes . . . . .	10
4	Fictitious Wing Mode Caused by Not Omitting Degrees of Freedom in Direction of Minimal Rod Line . . . . .	13
5	Flaws in Model II Idealization (Bottom Wing Cover Shown) . .	15
6	Revised Wing (Mode 1) . . . . .	16
7	Revised Wing (Mode 2) . . . . .	17
8	Revised Wing (Mode 3) . . . . .	18
9	Revised Wing (Mode 4) . . . . .	19
10	Revised Wing (Mode 5) . . . . .	20
11	Revised Wing (Mode 6) . . . . .	21
12	Revised Wing (Mode 7) . . . . .	22
13	Revised Wing (Mode 8) . . . . .	23
14	Revised Wing (Mode 9) . . . . .	24
15	Revised Wing (Mode 10) . . . . .	25
16	Revised Cargo Door (Mode 1) . . . . .	35
17	Revised Cargo Door (Mode 2) . . . . .	36
18	Revised Cargo Door (Mode 3) . . . . .	37
19	Revised Cargo Door (Mode 4) . . . . .	38
20	Revised Cargo Door (Mode 5) . . . . .	39
21	Revised Cargo Door (Mode 6) . . . . .	40
22	Revised Cargo Door (Mode 7) . . . . .	41
23	Revised Cargo Door (Mode 8) . . . . .	42
24	Revised Cargo Door (Mode 9) . . . . .	43
25	Revised Cargo Door (Mode 10) . . . . .	44
26	Revised Cargo Door (Mode 11) . . . . .	45
27	Revised Cargo Door (Mode 12) . . . . .	46
28	Average Time Spent in READ Module Extracting 1 Mode . . . . .	52

# VOLUME I TABLES

<u>No.</u>		<u>Page</u>
1	Statistical Description of 1/8-Scale Orbiter-Model II-Symmetric Case Comparison between Modal Synthesis and Direct Elimination Approach . . . . .	5
2	Wing Substructure Component Modes Comparison of Model II (Before and After Fix-Up) . . . . .	26
3	Comparison of Analytical Results Between Substructuring Methods for Symmetrical Free-Free Normal Modes (1/8-Scale Model II). . . .	29
4	Substructure Contribution to Generalized Stiffness and Mass of Orbiter for Symmetric Free-Free Modes (1/8-Scale Model II). . .	30
5	Contribution Factors (Generalized Modal Coordinate Values) of Substructure Component Modes to Orbiter Symmetrical Free-Free Modes (1/8-Scale Model II) . . . . .	31
6	Substructure Component Modes (Symmetrical Case) 1/8-Scale Model II . . . . .	32
7	Summation of Substructure Momentum Forces About Basic Origin for Orbiter Symmetric Free-Free Modes (1/8-Scale Model II) . . . .	33
8	Cargo Door Substructure Component Modes (Symmetrical Case) Comparison of Model II (Before and After Fix-Up) . . . . .	34
9	Computing Time to Obtain Orbiter Symmetric Modes Comparison Between Modal Synthesis and Direct Elimination Method . . . . .	49



## VOLUME II CONTENTS

<u>Appendixes</u>	<u>Page</u>
B4	Plots of Symmetric Component Modes/Phase 1 Analysis: Model II Fuselage. . . . . B4-1
B5	Input Bulk Data/Phase 1 Analysis: Model II Wing . . . . B5-1
B6	Plots of Component Modes/Phase 1 Analysis: Model II Wing . . . . . B6-1
B7	Input Bulk Data/Phase 1 Analysis: Model II Cargo Doors . . . . . B7-1
B8	Plots of Symmetric Component Modes/Phase 1 Analysis: Model II Cargo Doors . . . . . B8-1
B9	Input Bulk Data/Phase 1 Analysis: Model II Fin . . . . . B9-1
B10	Plots of Symmetric Component Modes/Phase 1 Analysis: Model II Fin . . . . . B10-1
B11	Input Bulk Data/Phase 1 Analysis: Model II Payload . . B11-1
B12	Plots of Symmetric Component Modes/Phase 1 Analysis: Model II Payload . . . . . B12-1
B13	Input Bulk Data/Pre-Phase 2 Copy Run and Phase 2 Analysis: Model II Orbiter . . . . . B13-1
B14	Input and Plots/Phase 3 Analysis: Model II Fuselage - Symmetric Free-Free Orbiter Modes . . . . . B14-1
B15	Input and Plots/Phase 3 Analysis: Model II Wing - Symmetric Free-Free Orbiter Modes . . . . . B15-1
B16	Input and Plots/Phase 3 Analysis: Model II Cargo Doors - Symmetric Free-Free Orbiter Modes . . . . . B16-1
B17	Input and Plots/Phase 3 Analysis: Model II Fin - Symmetric Free-Free Orbiter Modes . . . . . B17-1
B18	Input and Plots/Phase 3 Analysis: Model II Payload - Symmetric Free-Free Orbiter Modes. . . . . B18-1

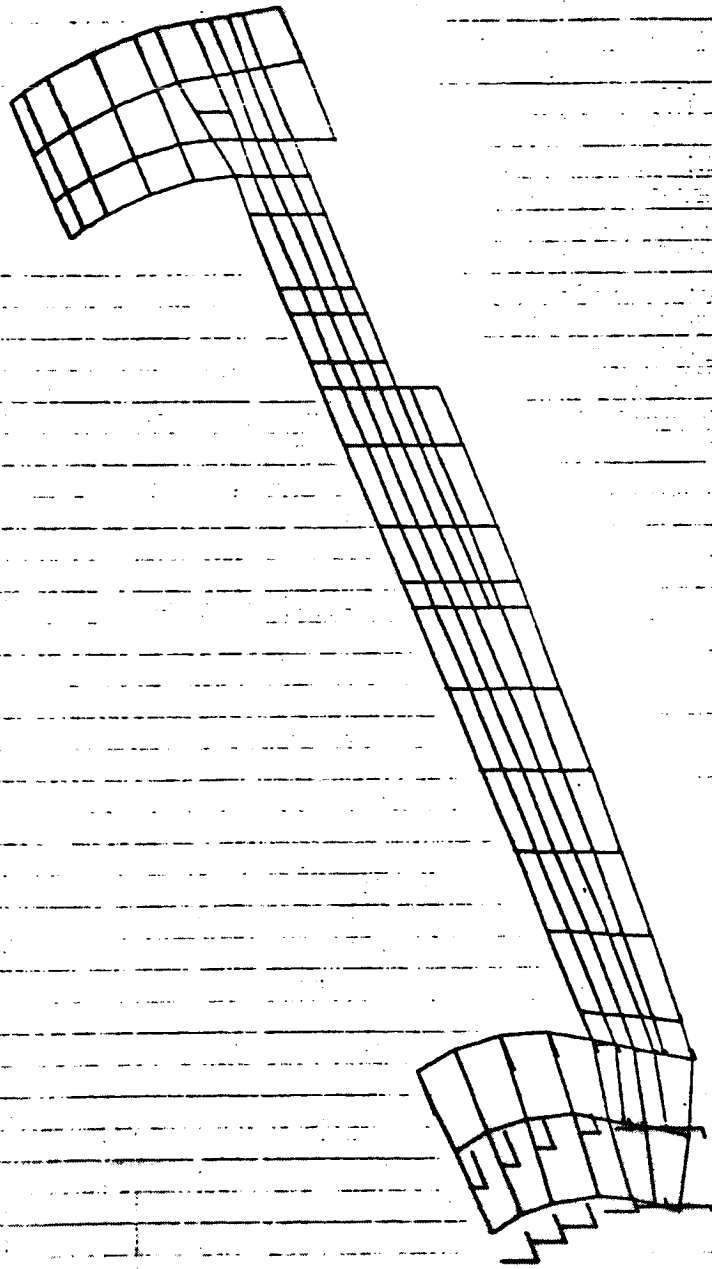
## ABSTRACT

A dynamic substructuring analysis, utilizing the component modes technique, of the 1/8 scale Space Shuttle Orbiter finite element model is presented. The analysis was accomplished in 3 phases, using NASTRAN RIGID FORMAT 3 (Level 15.5.1), with appropriate Alters, on the IBM 360-370 (Model 165). The Orbiter was divided into 5 substructures, each of which was reduced to interface degrees of freedom and generalized normal modes. The reduced substructures were then coupled in Phase 2 to yield the first 23 symmetric free-free orbiter modes. The eigenvectors in the original grid point degree of freedom lineup were then recovered in Phase 3. A comparison is then made with an analysis which was performed with the same model using the direct coordinate elimination approach under NASA contract NAS 1-10635-12 (Reference 1). Eigenvalues were extracted using the inverse power method.

**Appendix B4**  
**PLOTS OF SYMMETRIC COMPONENT MODES/PHASE I**  
**ANALYSIS MODEL II FUSELAGE**

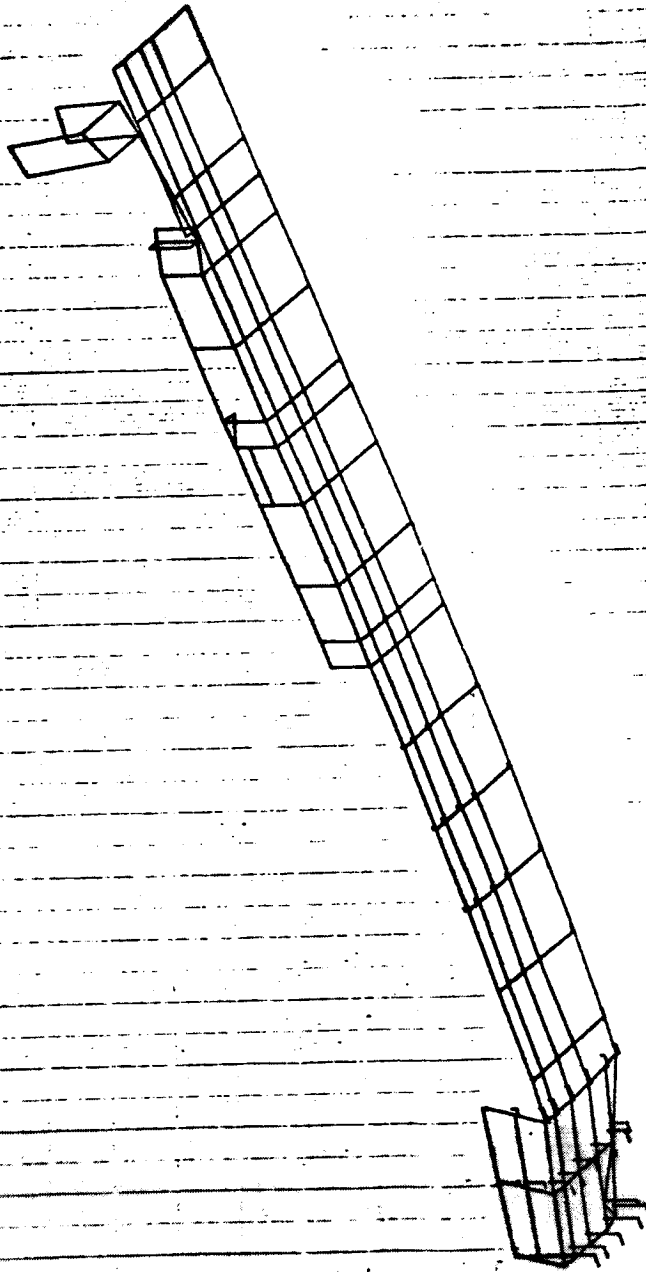
2-1

10/10/74 1000-0000 0 1.00000000

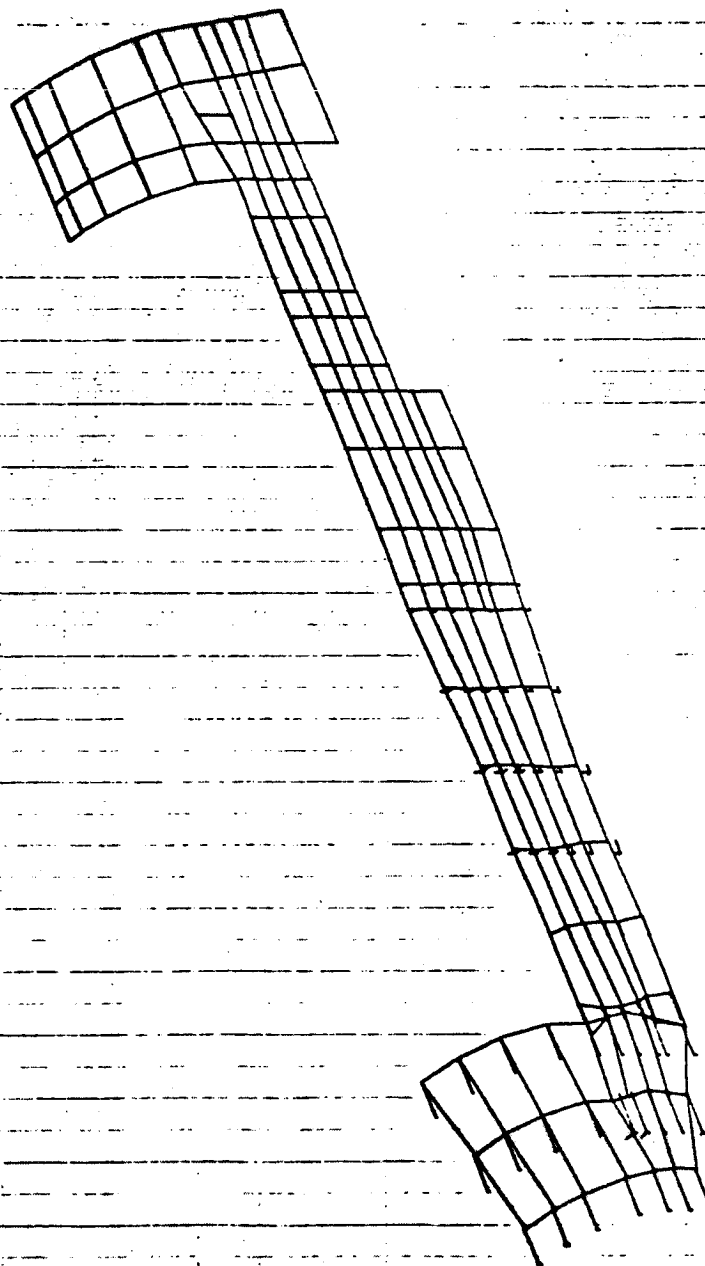


PHASE 1 ORBITER PURCHASE-87AM CASE) MODEL 2  
SKING HALF EFF LONG. 83 ( EFF. TRANS. AT WING (8-2/2EFF.)  
FREE MODES FINES AT INTERFACE  
MODAL DEFER. SURFACE 1 MODE 1 FREQ. 88.40704

4 007/007/0 000-007, 0 1.00000000

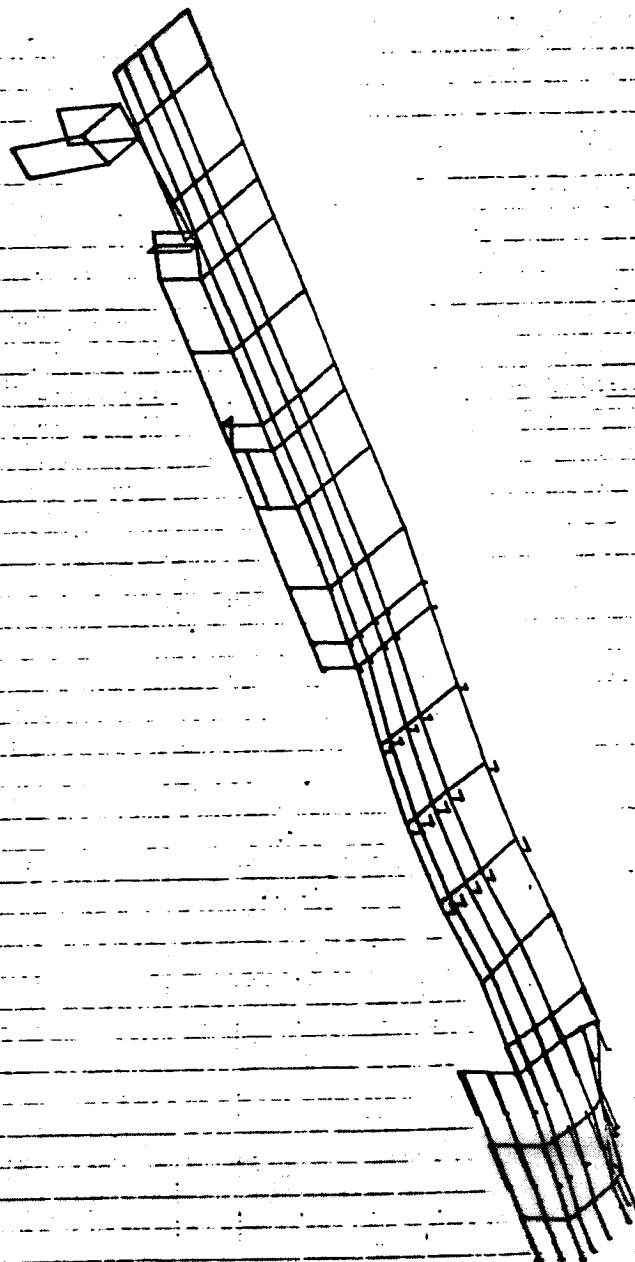


PHASE 1. GIBBITER FURCLAP-5THM CASE) MODEL 2  
SHING HAF 077.1.000.00 ( 077.1.000.00 AT WING (0-0/0077.1)  
FREE MODES FIXED AT INTERFACE  
MODAL DEFOR. SUBCASE 1. MODE 1. FREQ. 88.40704



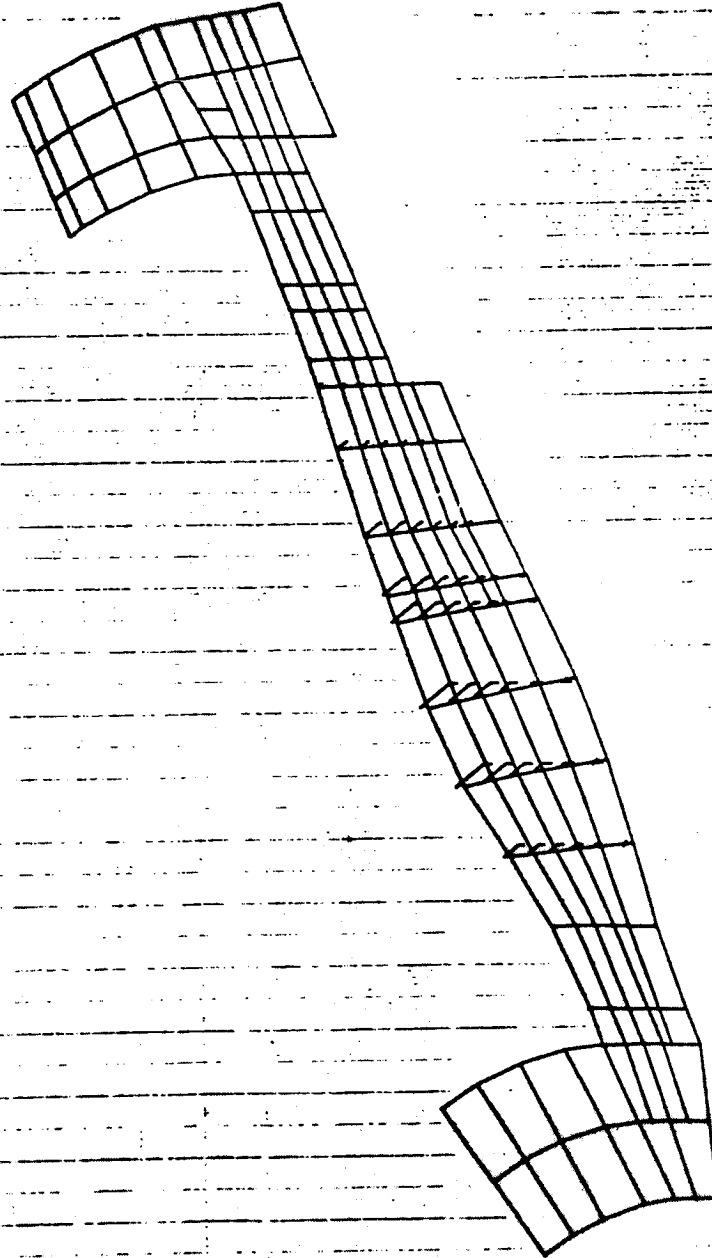
PHASE 1 CONVERTER PURCHASE-SYSTEM CASE) MODEL 2  
SKINS HALF EFF. LONG. 98 ( EFF. TRANS. AT WING (0.2/3077.)  
FREE MODES FIXED AT INTERFACE  
MODAL DEFOR. SUBCASE 2 MODE 2 FREQ. 102.4800

100-1074 100-1074, 1, 100-1074



PHASE 1: CRIBBITER FUSELAGE-STYAN CASE1 MODEL 2  
SKIN HALF EFF. LONG. 861 EFF. TRAILING AT WING 40-2/3 EFF. 1  
FREE MODES FIXED AT INTERFACE  
MODAL ORDER, SUBCASE 2 MODE 2 FREQ. 189.4000

8



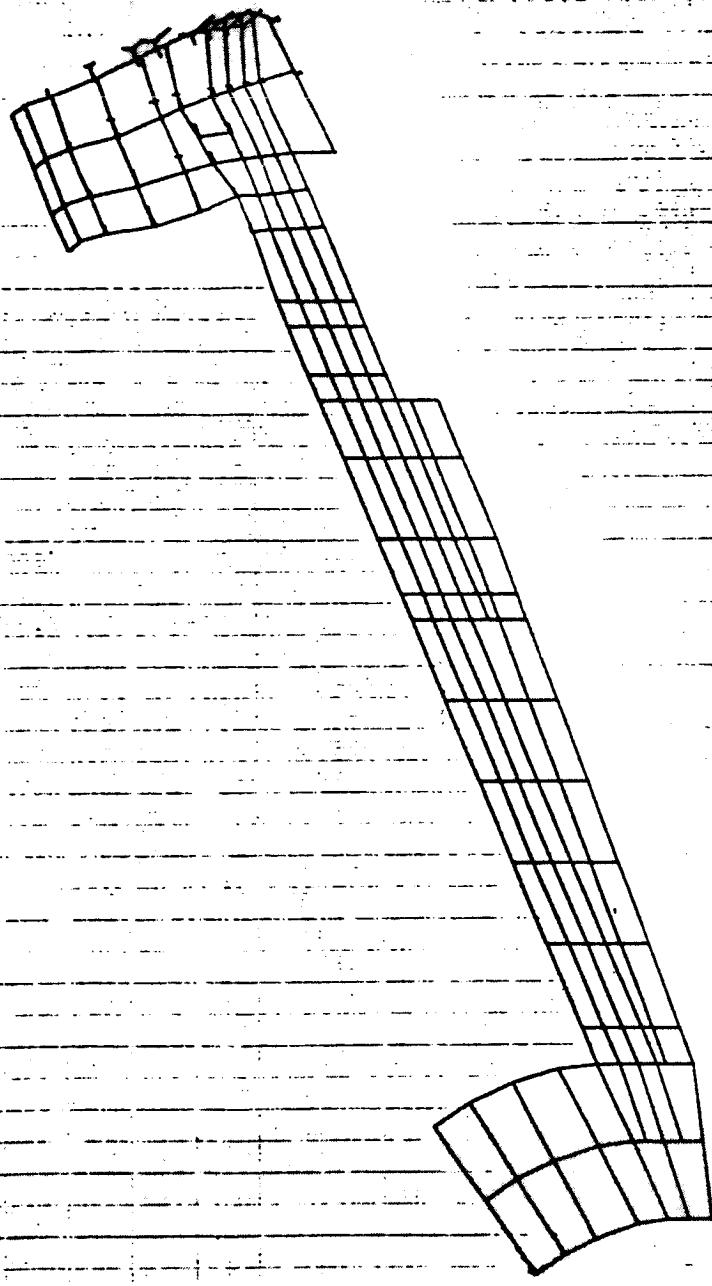
PLYMOUTH 1 QUARTER TON STATION AND 1/2 TON CARS 1 MODEL 1  
 SELLING HALF EFF. LONG. 100 C. 777. TRANS. AT WIND CO-2/3C77.)  
 FREE MESSAGES PAGES AT INTERFACE  
 MODAL OPER. SUBCARS 3 MODE 3 PAGES. 248.5784



PHASE 1 (ORBITER FUELAGE-SYRM CASE) MODEL 2  
SKING HALF EFF. LONG. 99 ( EFF. TRANS. AT WING (0.2/SEFF.)  
FREE MOVING FIXED AT INTERFACE  
MODEL SEFOR. SUBCASE 3 MODE 3 FREQ. 248.8724

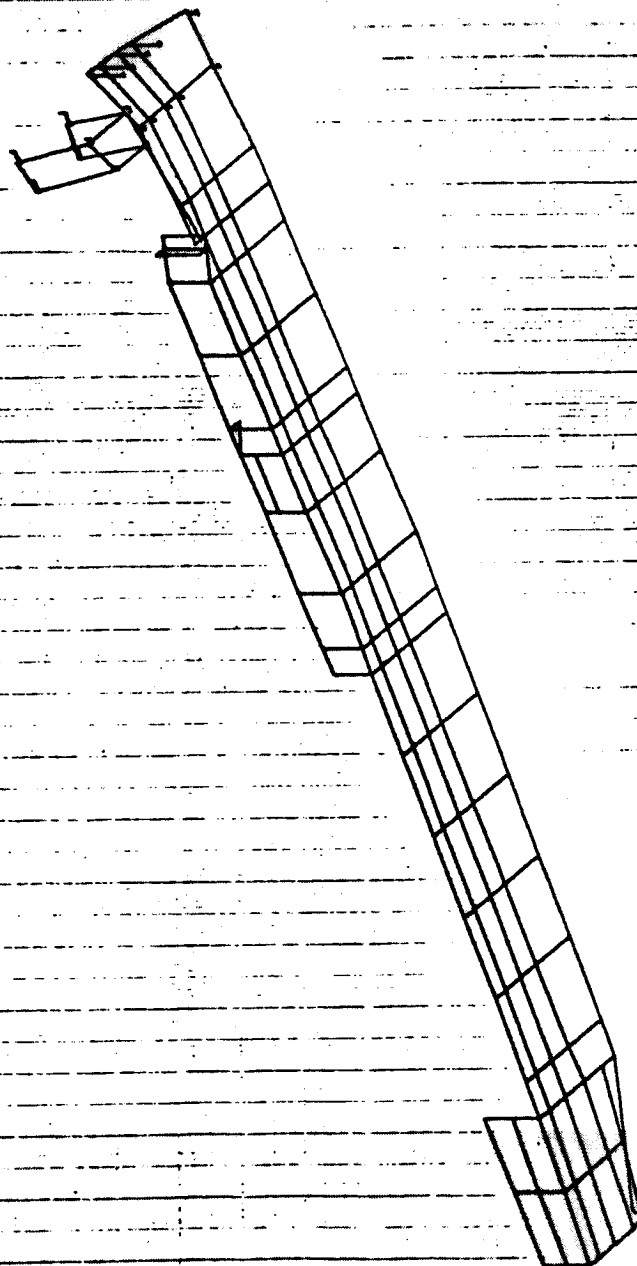
01

10/10/74 0000-0000, 0 1.000-0000



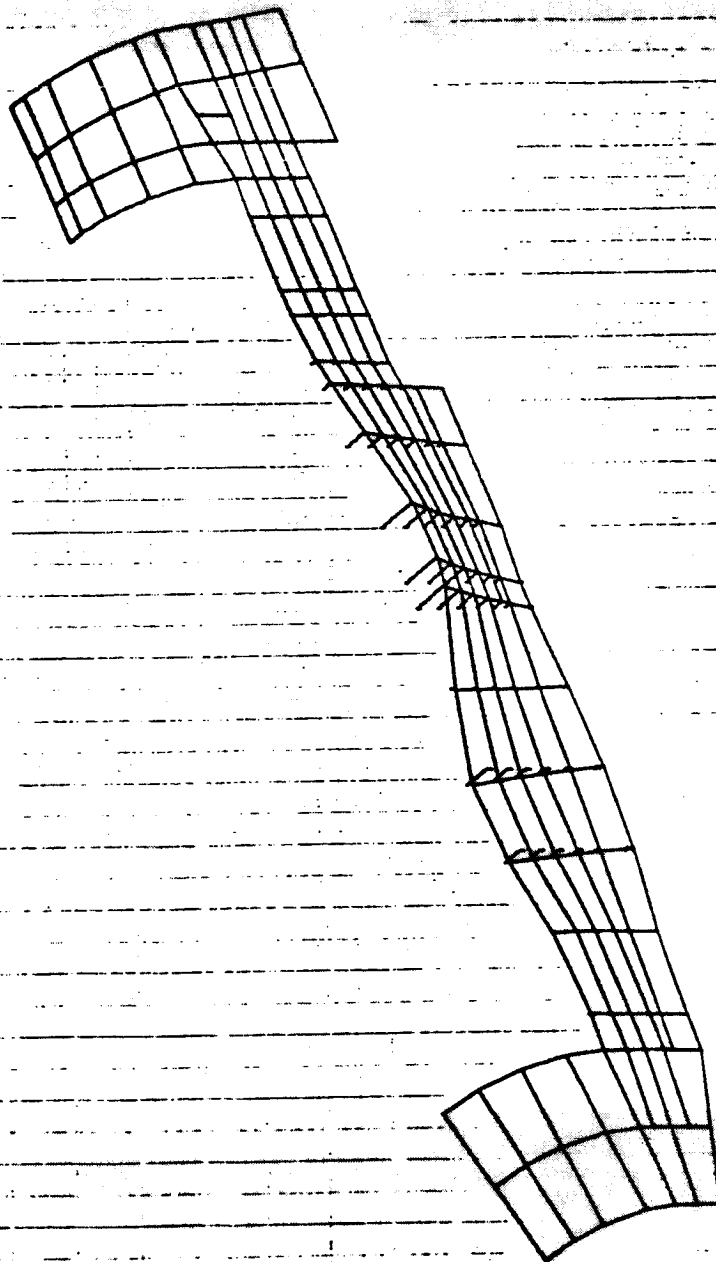
PHASE 1 (CONSTIT. FAILURE-SYM. CASE) MODEL 2  
 001.00 HALF EFF. LONG. 0.001 EFF. TRANS. AT WING 00.0/SECT. 1  
 FREE MODES FINES AT INTERFAC  
 MODAL DEFORM. SUBCASE 4 MODE 4 FREQ. 270.8716

10/10/70 0001-007, 1.000-0000



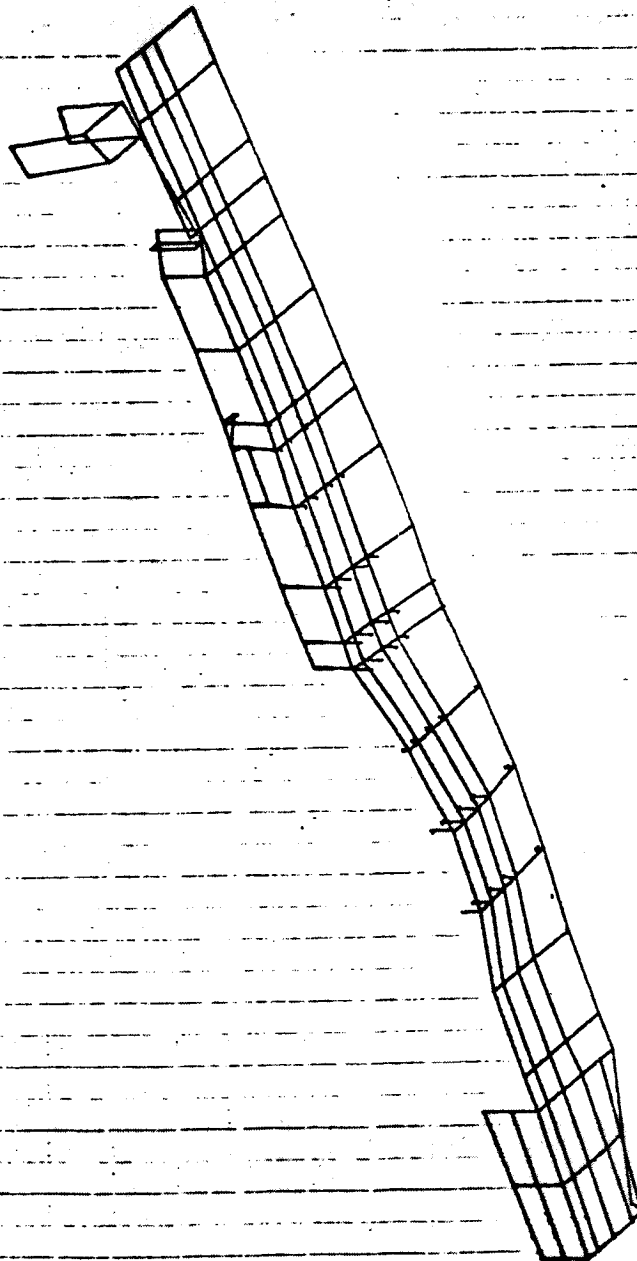
PHASE 1 (HULL) FUEL TANK - STIM CASE) MODEL 2  
 SKIN HALF OFF (HULL) 0.5 (OFF) TRANS. AT WING (0.5/0.5)  
 FREE MODES FIXED AT INTERFACE  
 MODAL DETON. SUBCASE 4 MODE 4 FREQ. 270.874

02 18/10/74 1410-007. 0.1.00000000



PHASE 1 ORBITER FURCANE-SYMM CASES MODEL 2  
 BEING HALF SYMMETRIC, AND 1/2 TRANS. AT WING CD-2/277.1  
 FREE MODES FIXED AT INTERFACE  
 MODAL DEFORM. SURFACE 8 MODE 8 FREQ. 260.7184

0 10/10/74 0000-0007, a 1.000000000



PHASE 1 SUBSISTE FURCLARE-8THM CASE) MODEL 2  
BEING HALF EFF. LONG. 081 EFF. TRANS. AT WING 082/2EFF.)  
FREE MODES FIXED AT INTERFACE  
MODAL DEFOR. SUBCASE 8 MODE 6 FREQ. 260.7724

88 10/10/74 1000-007, 0 2, 07700040

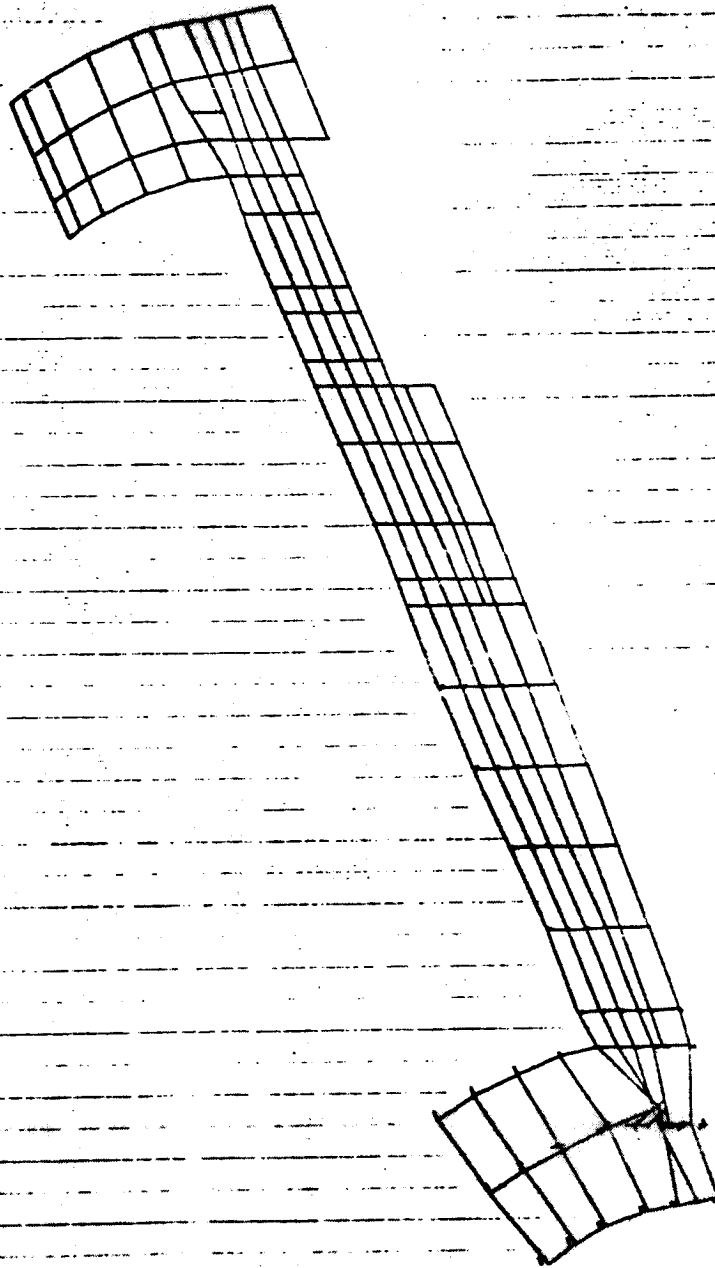
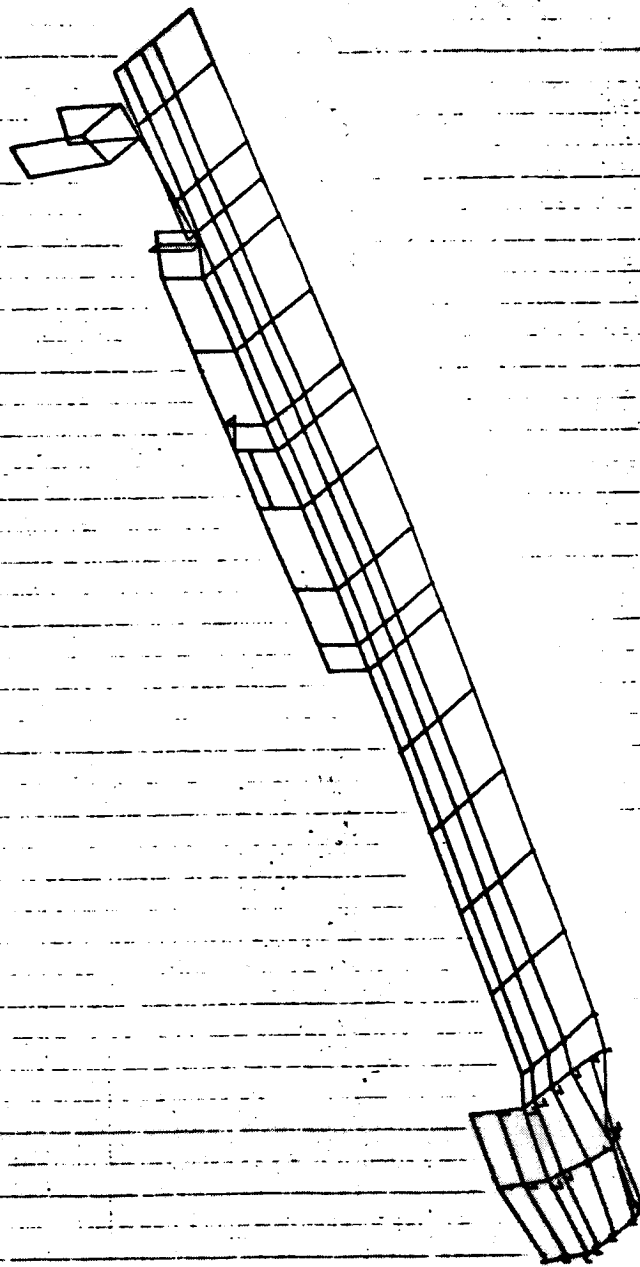


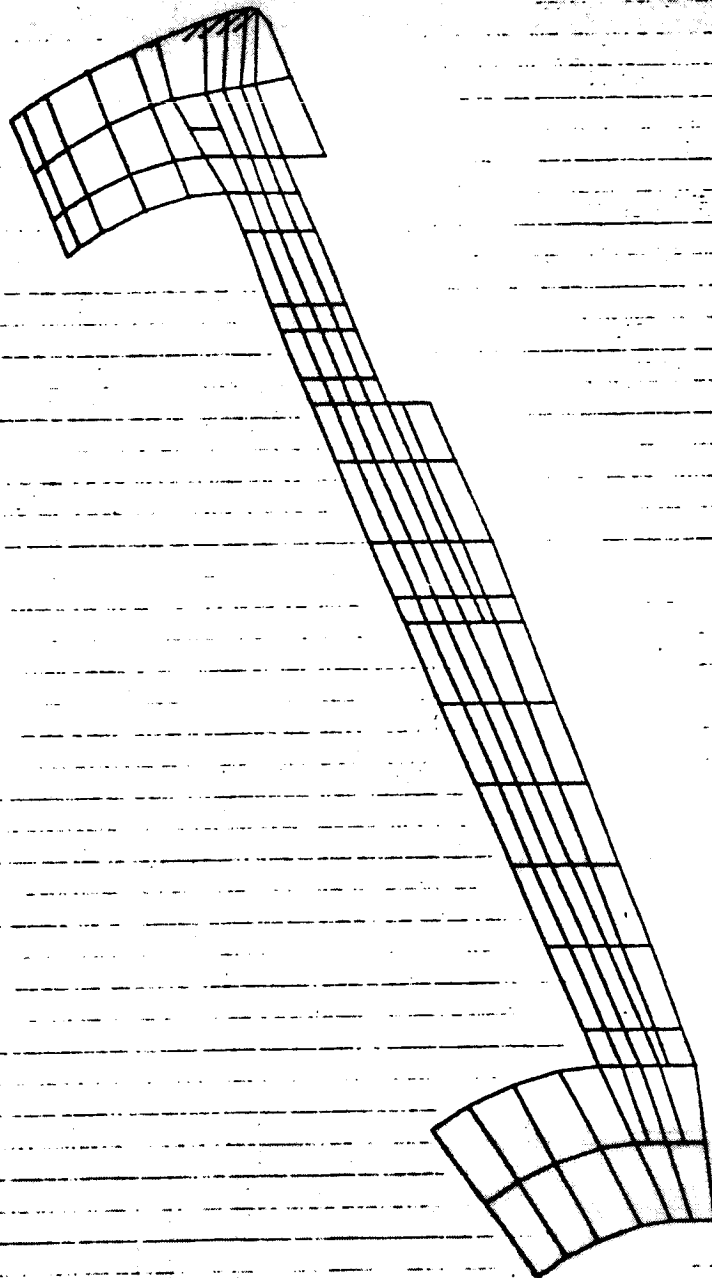
PHOTO COMPUTER FUSELAGE-8000 CASE) MODEL 2  
SECTOR HALF EFF. LCH - 281 EFF. TRANS. AT WIND 1-2, 1000  
FUEL MODEL FIND 67 INTERFACE  
MODAL DETON. FUSELAGE 0 MADE 0 FREQ. 333 100

10/10/74 000-007, 4 2.9770000



PHASE 1 CONSIDER FUEL/LOAD-SYMM CASES) MODEL 2  
SKINS HALF EFF. LONG. 100% EFF. TRANS. AT WING (0-2/2007.)  
FREE MEMES FINES AT INTERFACE  
MODAL DEFOR. SUBCASE 0 MODC 0 FRECO. 323.7610

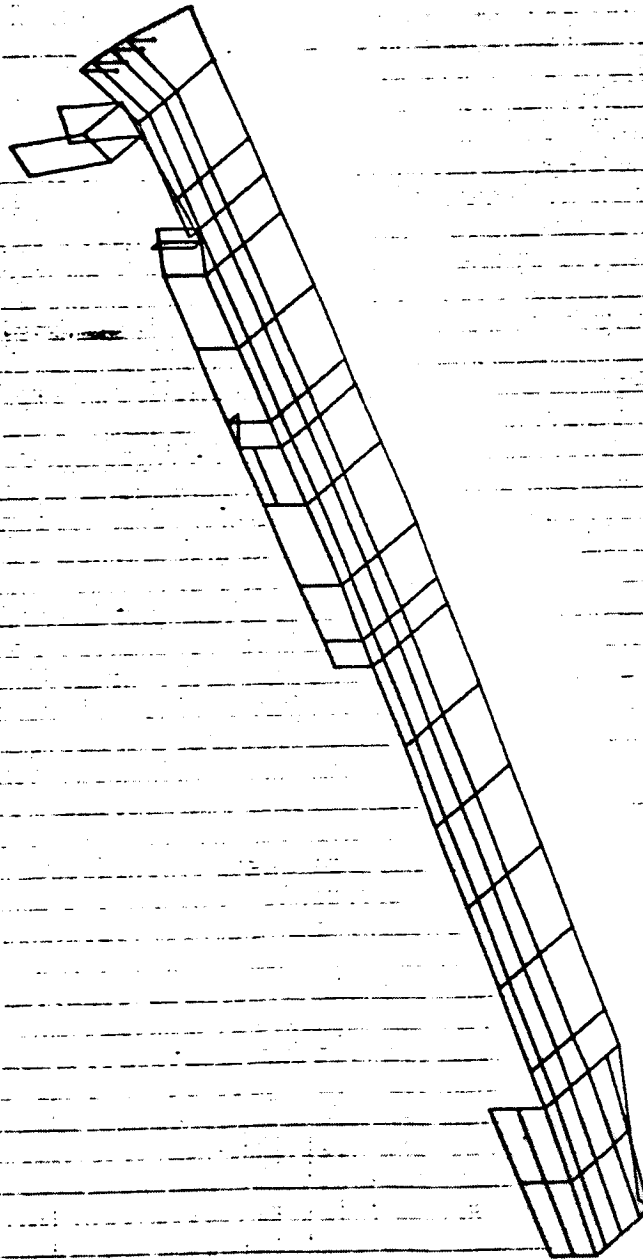
04 10/10/76 1000-007. 0 1.10000000



PHASE 1. CORRELATED FORMS-2000 CASES MODEL 2  
 SKINS HALF EFF. LONG. 0.50( EFF. TRANS. AT WING 00-2/0077.1)  
 FREE MODES FIXED AT INTERFACE  
 MODAL DEFEN. SUBCASE 1 MODE 1 FREQ. 339.0011



10/10/74 1000-007. = 1.10000000



PHASE 1 CORBITER PUBLAGE-SPAM CASE) MODEL 2  
SKING NALP EFF.LONG..881 CFF.TRANS.AT WING(0-2/2EFF.)  
FREE MODES FIXED AT INTERFACE  
MODAL DEFOS. SUBCASE 7 MODE 7 FREQ. 331.8811

10/10/74 1000-007, = 1.00000000

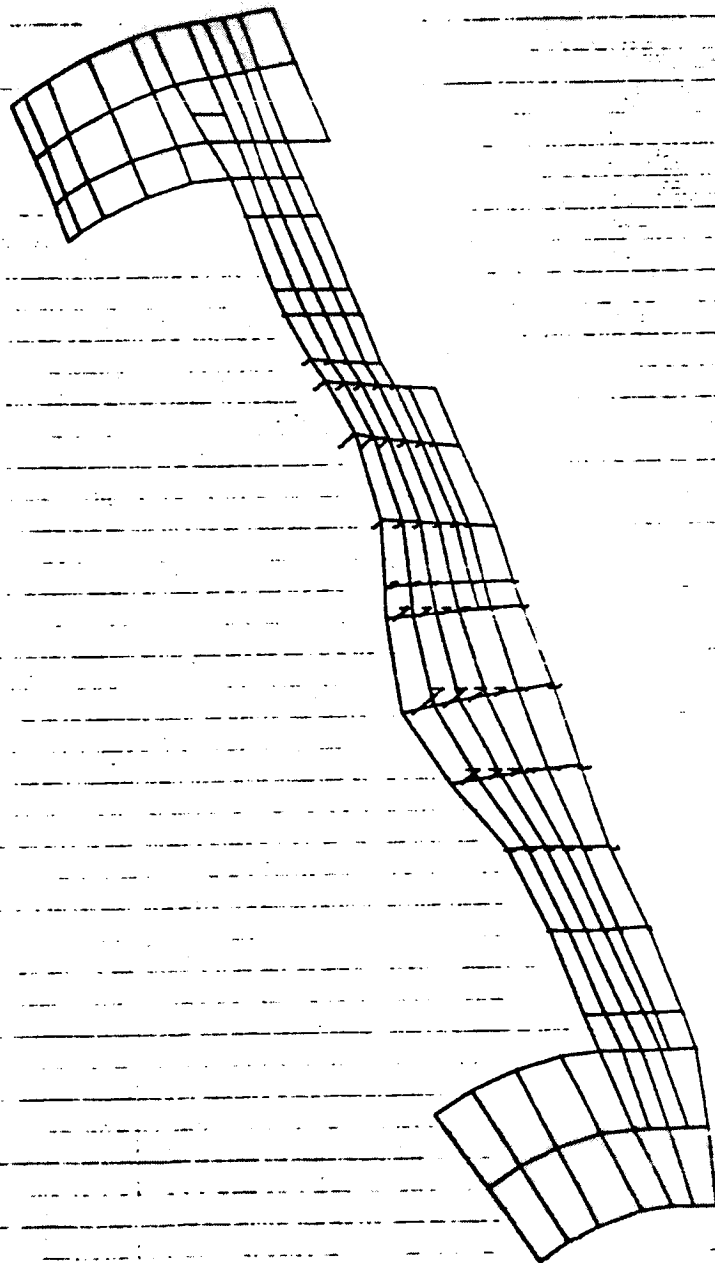
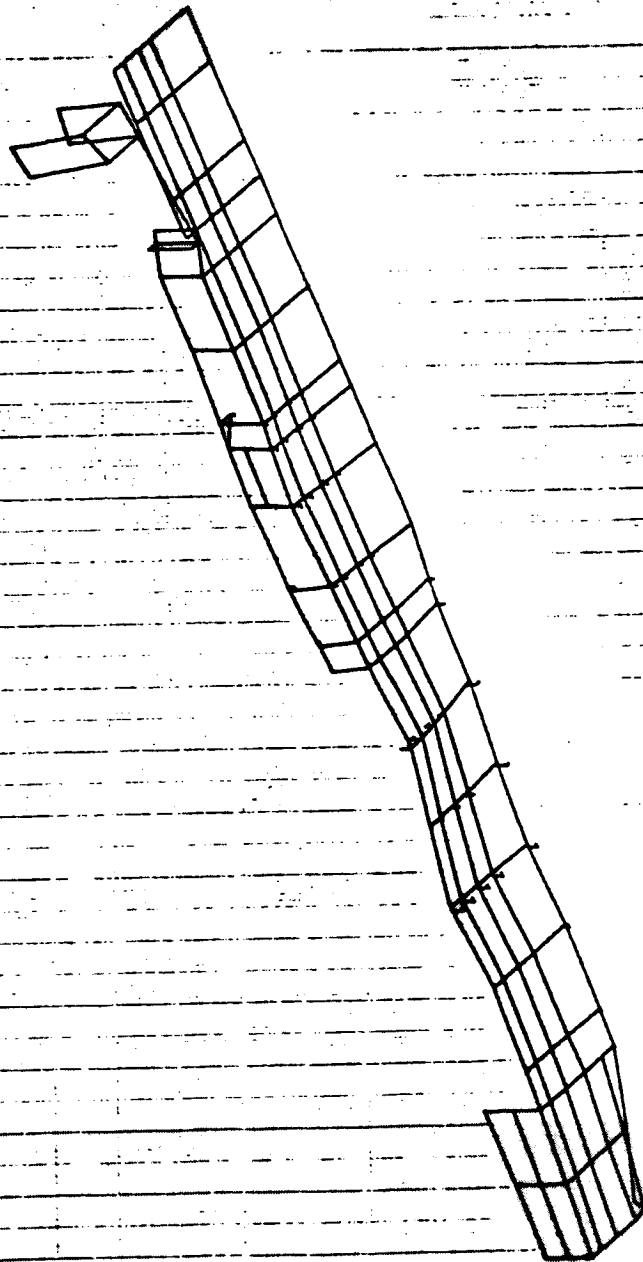


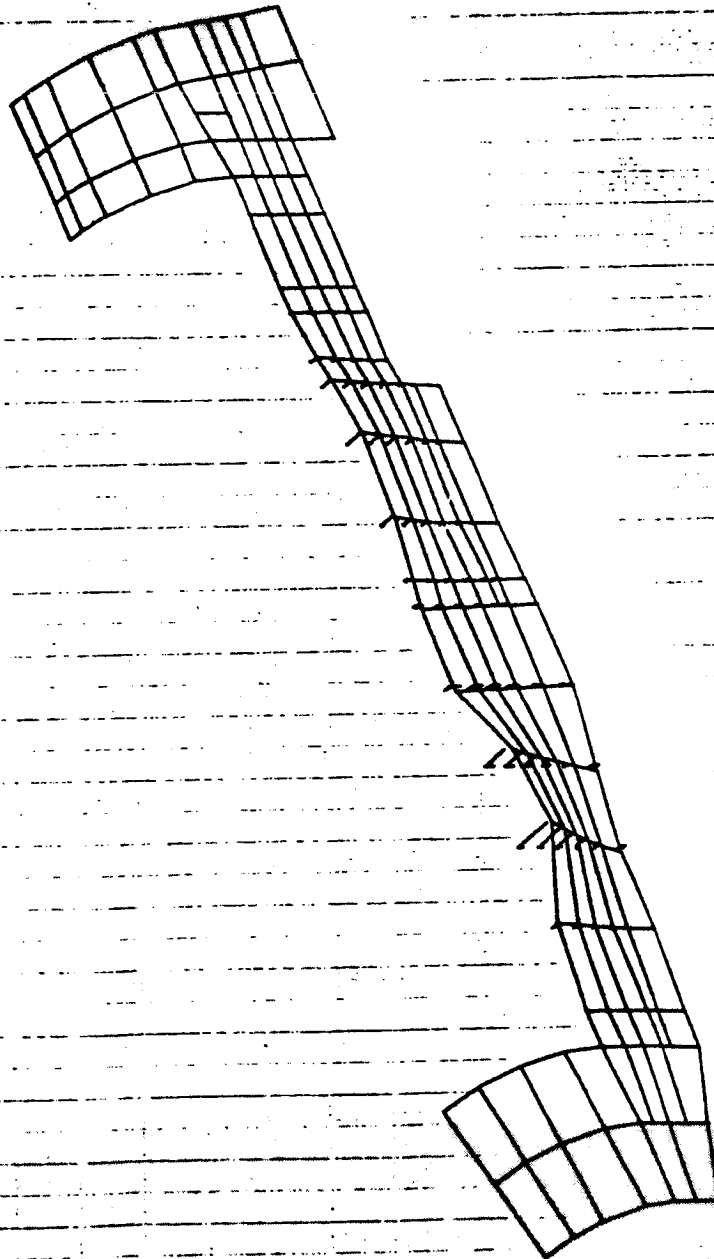
PLATE 1. COMBINED FIBERGLASS-BYMA CASE, MODE 1  
 OF A HALF CYCLES OF OFF-TRACK AT WIND 100 KTS.  
 P. 1. MODES FIXED IN INTERFACE  
 M. 1. DEFORM. SUBCASE 2. MODE 8. P. 1. 379 1421

10/10/74 1000-007.0 1.00000000



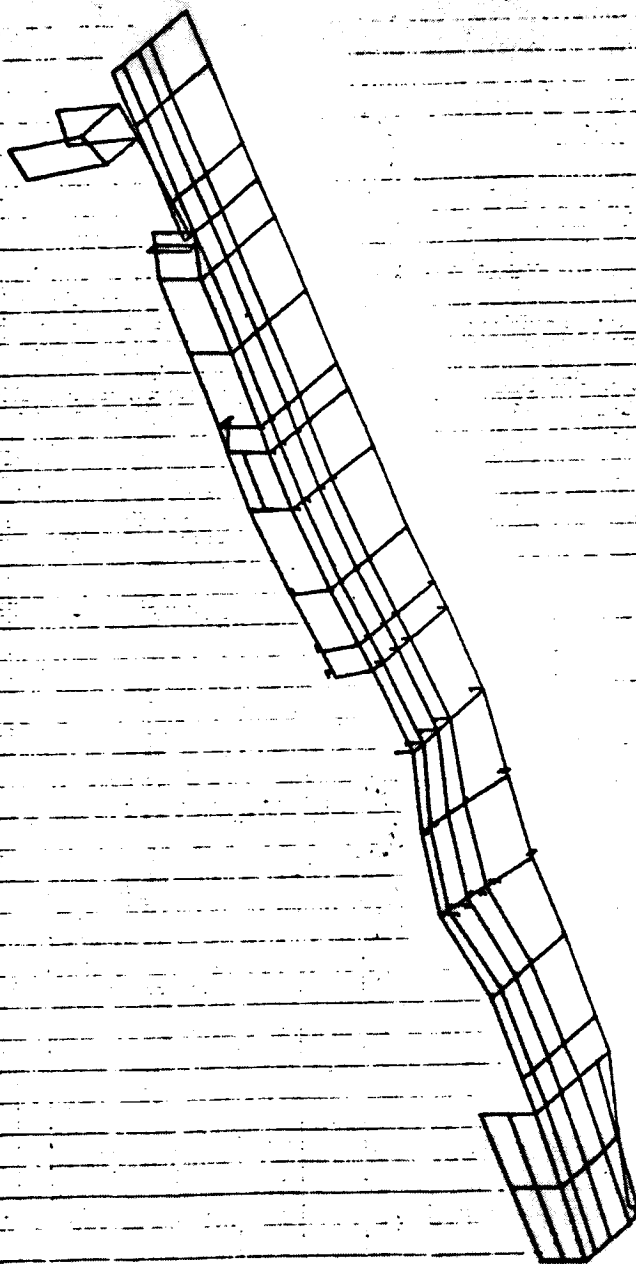
PHASE 1 ORBITER FUELAGE-5740 GALS) MODEL 2  
BEING HALF 577.1800, 00 ( 577. TRANS. AT WING 00-2/0277.)  
FREE MODES FIRED AT INTERFACE  
MEDAL BEFOR. SUBCASE 0 MODE 0 PRCO. 376.9482

00 10/10/74 MMH-007, 01.01000110



PHASE 1 SUBMITTER FUNDING-0700 CASE) MODEL 2  
BANKING MAPS OFFICIALS.00 ( CTF. TRANS. AT WIND 00-00/00077.)  
FREE MODES FINED AT INTERFACE  
ACDAL SECTOR. SUBCASE 1 MODE 1 FREE. 011.0012

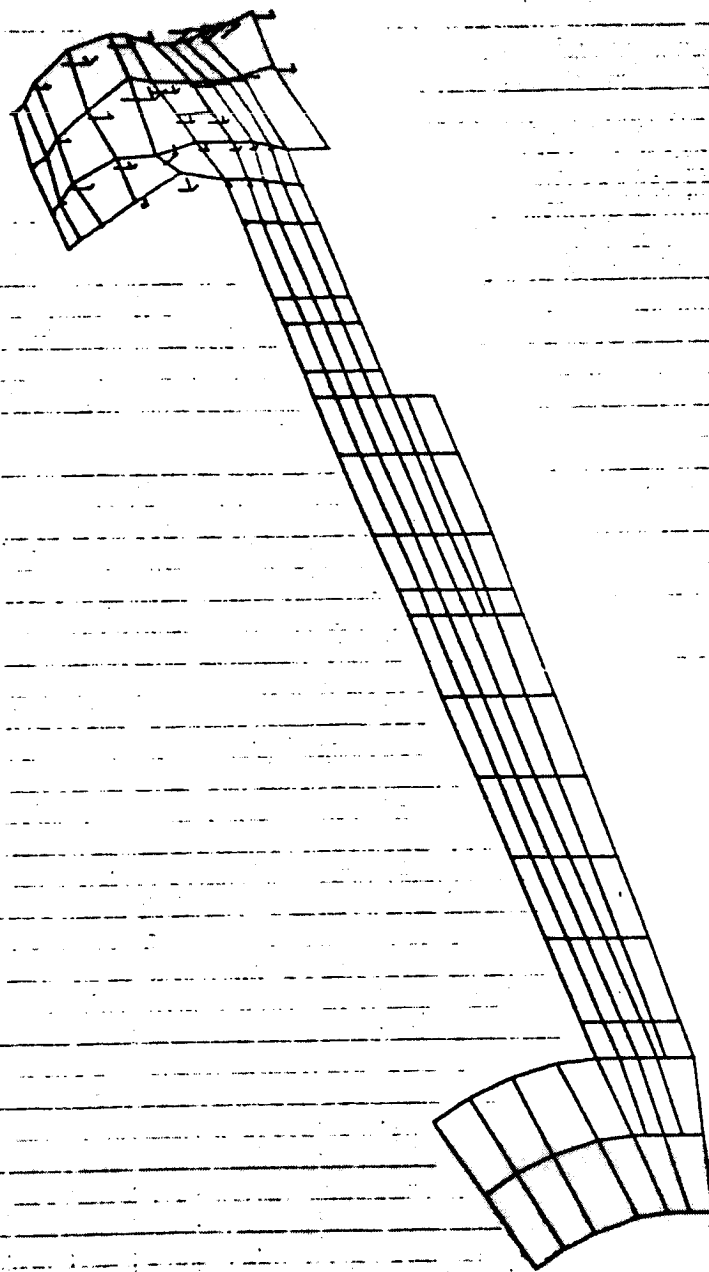
10/15/74 0001-007. = 1.01000110



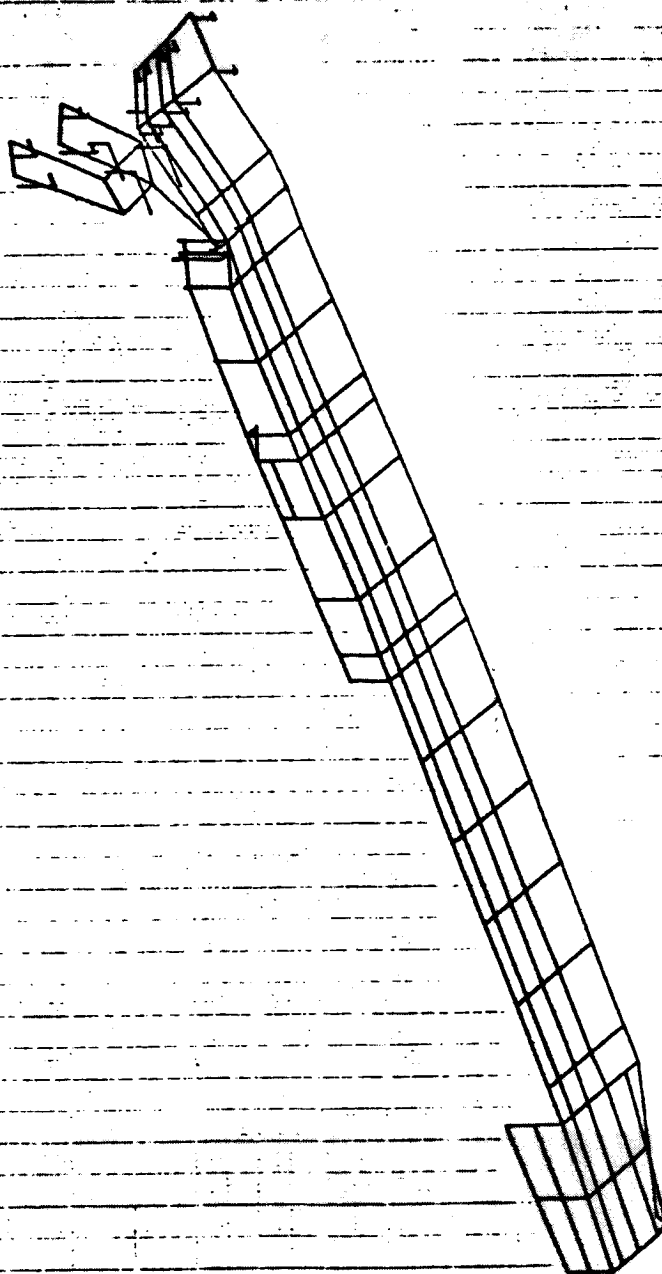
PHASE 1 COMPUTER PROGRAM-8700 CASE) MODEL 2  
 SKING HALF EFF. LONG. 88 ( EFF. TRANS. AT WIND 0-2/0077.)  
 FREE MODES FIXED AT INTERFACE  
 MODAL DEFOR. SURFACE 1 MODE 1 FREQ. 391.0412

5

07 10/10/74 000-007, = 1.1776000

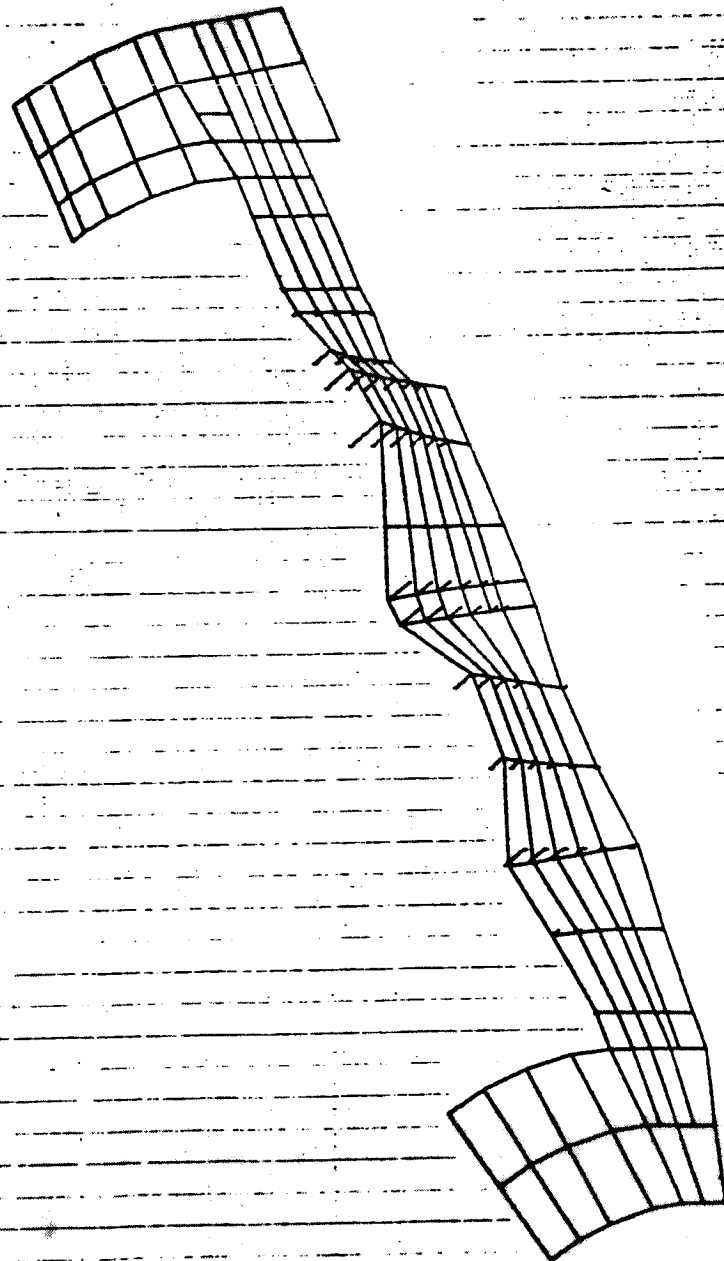


PHASE 1 CONTINUES PARALLEL-SPIN CASE) MODEL 2  
 BEING MAP BY LAMB, 001 EFF. TRANS. AT WING (0.5/3EFF.)  
 FREE MODES FIXED AT INTERFACE  
 MODAL STIFF. SUBCASE 10 MODE 10 FREQ. 433.84%



PHASE 1: COMPLETE PURCHASE-DOWN CASE) MODEL 2  
SKING HALL OFF. L.O.B. 001 E77. TRANS. AT WING (0-2/2077.)  
FREE MOBILE FINDER AT INTERFAGE  
MOBILE SETOR. SUBCASE 10 MODE 10 FREQ. 439.8440

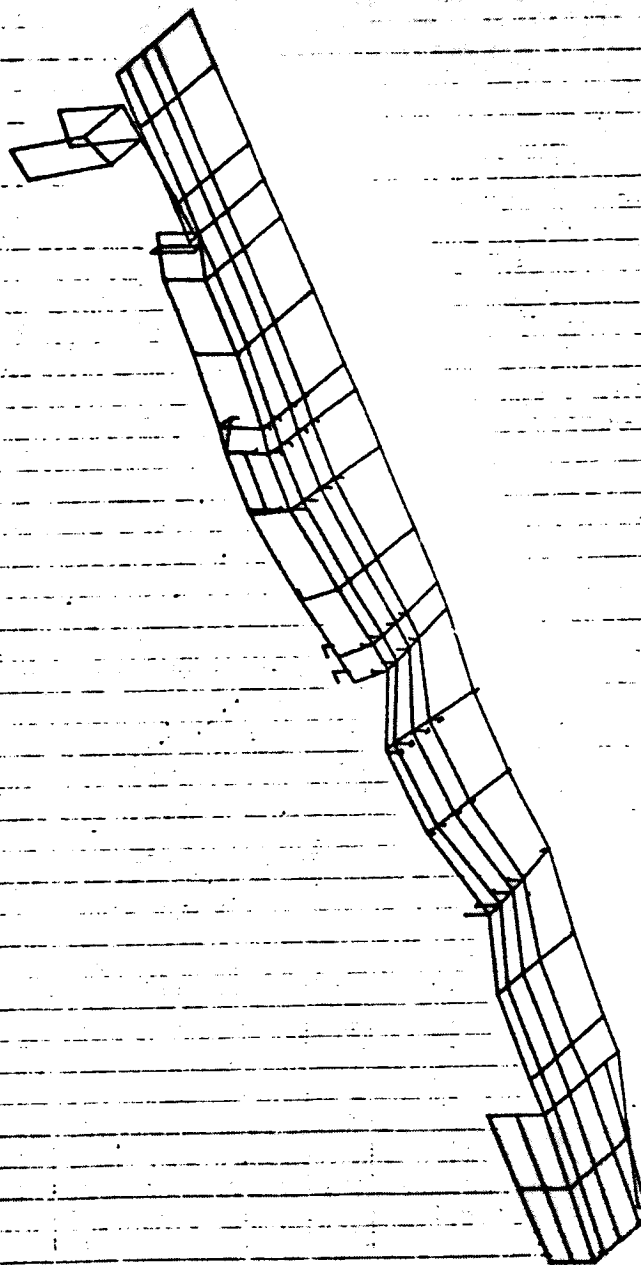
63 10/10/74 MAX DEF. = 1.00000000



PHASE 1: COMBINED FUSELAGE-WING CASE: MODEL 2  
 BENDING HALF EFF. LONG. 0.89 (EFF. TRANS. AT WING 00-0.00077.)  
 FREE MODES FIXED AT INTERFACE  
 MODAL DEFOR. SURFACE 11 MODE 11 FREQ. 448.5931



11 18718714 188-887. = 1.00000000

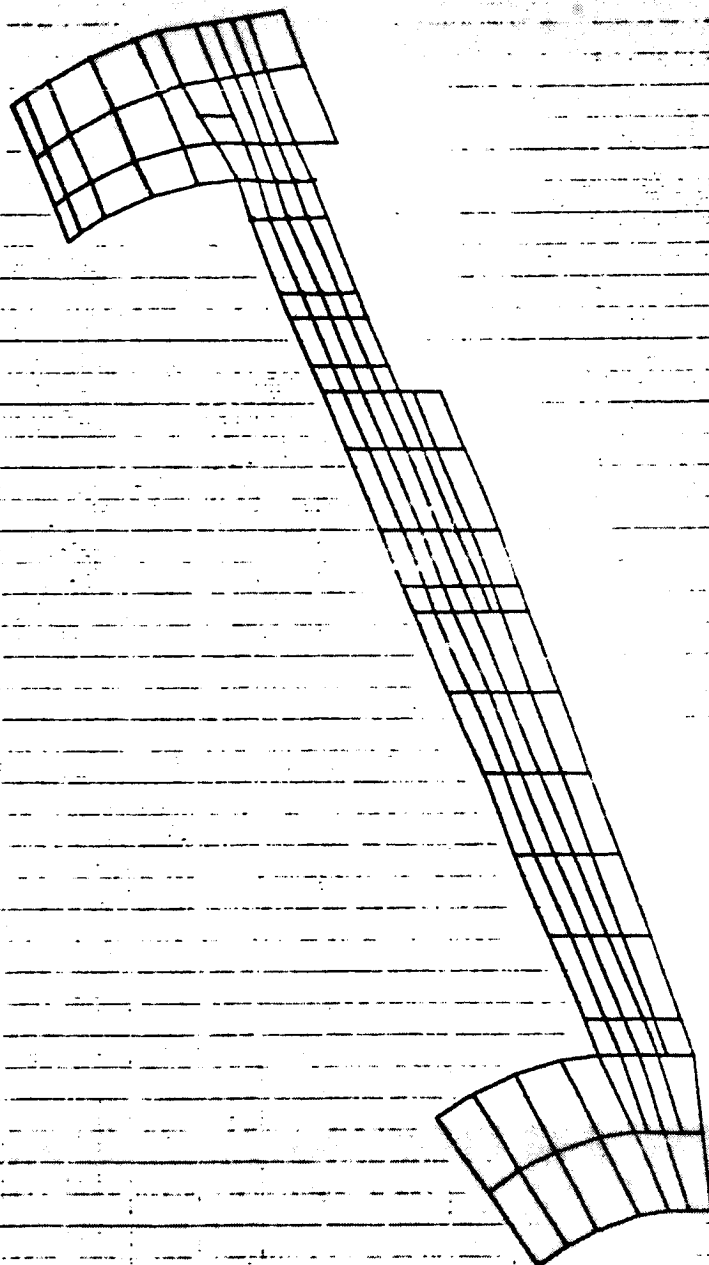


PHASE 1. COMBINED FUSelage-SYTH CASEY MODEL 2  
BEING HALF EFF. LONG. 001 EFF. TRANS. AT WING 00-2/3EFF. 1  
FREE MEMES FINED AT INTERFACE  
MEDAL BEFOR. SURFACE 11 MODE 11 FREQ. 448.8301

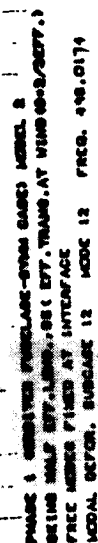
09

10/10/74 0000-0007, 0 1.1-0004100

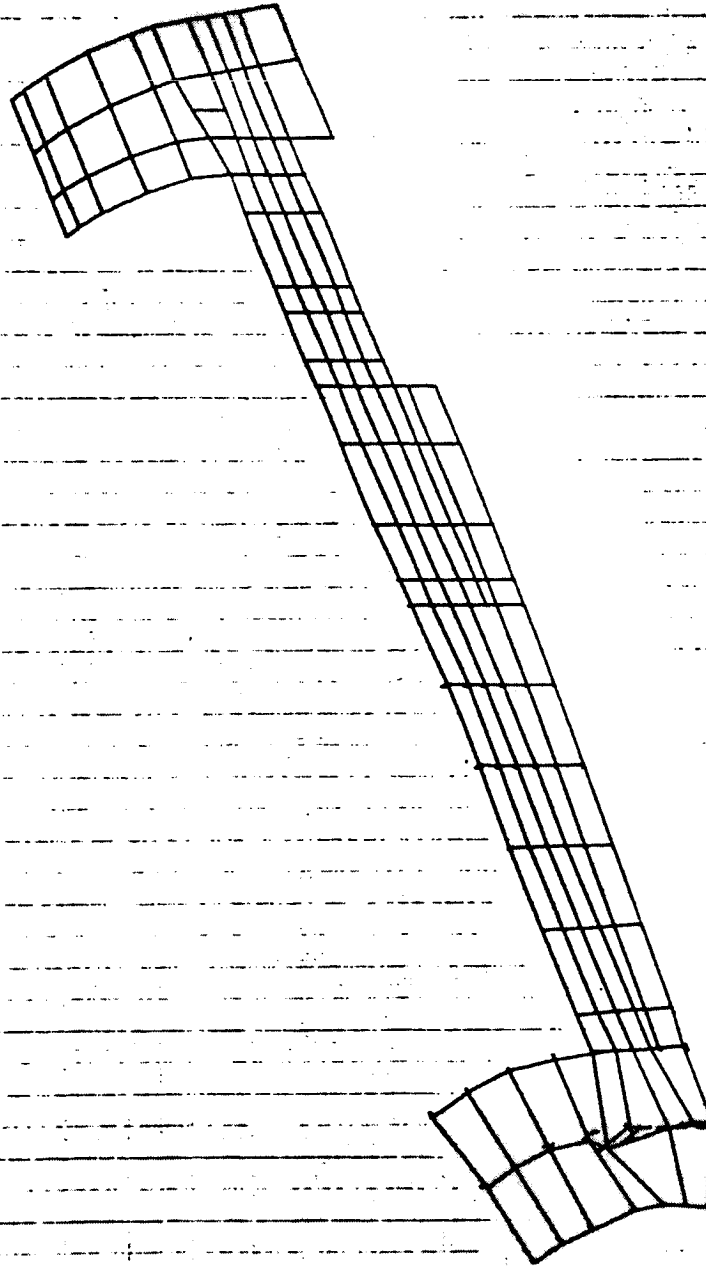
09



PHASE 1. CONSIDER THE FOLLOWING CASE: MODEL 2  
 ONE HALF EFF. LONG. PER EFF. TRANS. AT WINDS 10/3 10/3  
 THE PLOTS GIVEN IN THE ATTACH  
 WIND JCTON. SUBCASE 12 MADE 12 PRED. 496.017

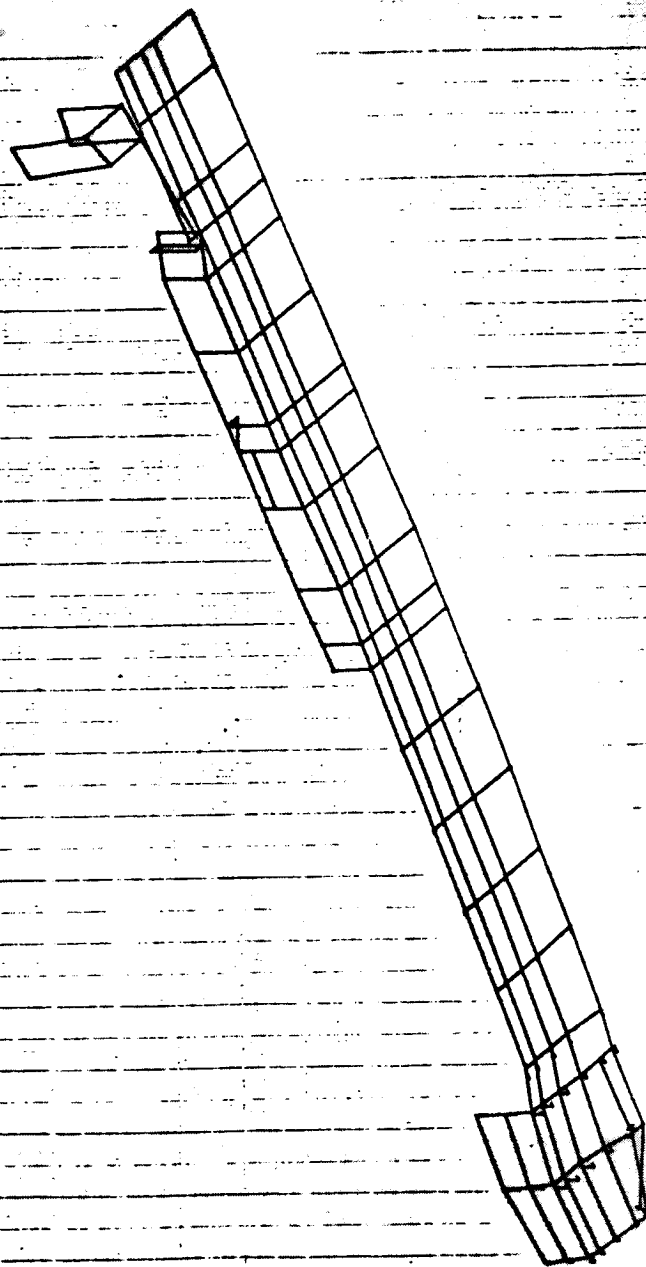


TO 10/15/74 MMS-DET. = 2.07210000



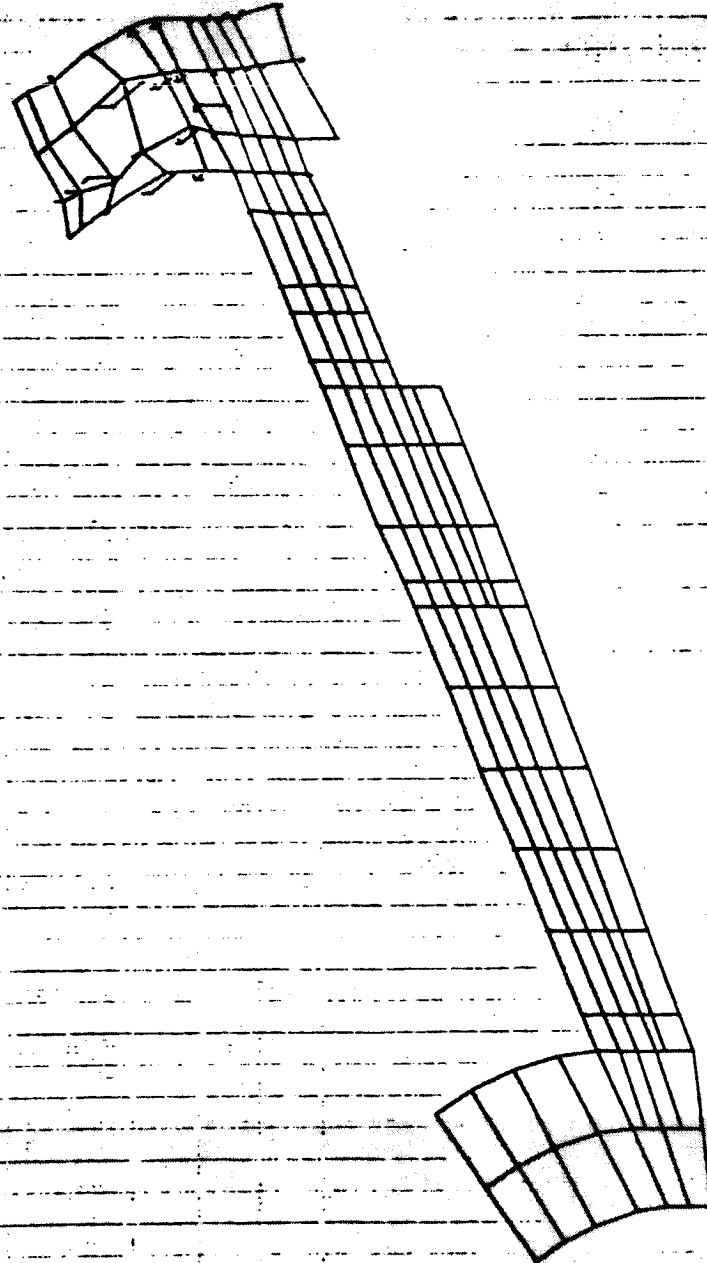
PHASE 1 CONTINUED FUNDAMENTAL MODE MODEL 2  
 BEING HALF EFF. LONG. 801 EFF. TRANS. AT WING 08-2/2077.  
 FREE MODES FINES AT INTERFACE  
 MODAL DEFOR. SURFACE 19 MODE 13 FREQ. 507.0768

000-1074 000-007. = 2.87210000



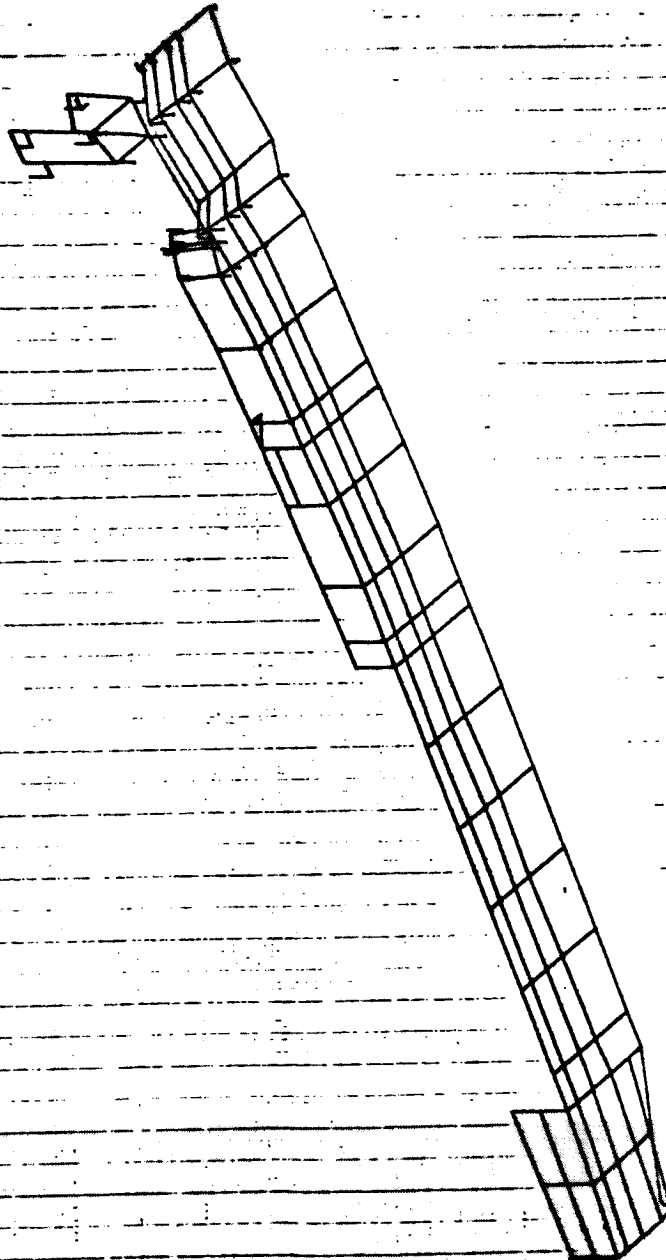
PHASE 1 COMPUTER FUEL-LINE-870M CASED MODEL 2  
 BEING HALF EFF. LONG. 881 EFF. TRANS. AT WING 8-2/2077.  
 FREE MODES FIXED AT INTERFACE  
 MODAL SECTOR. SUBCASE 13 MODE 13 FREQ. 807.0700

11 10/10/70 0000-0027, 0 1.001.00000



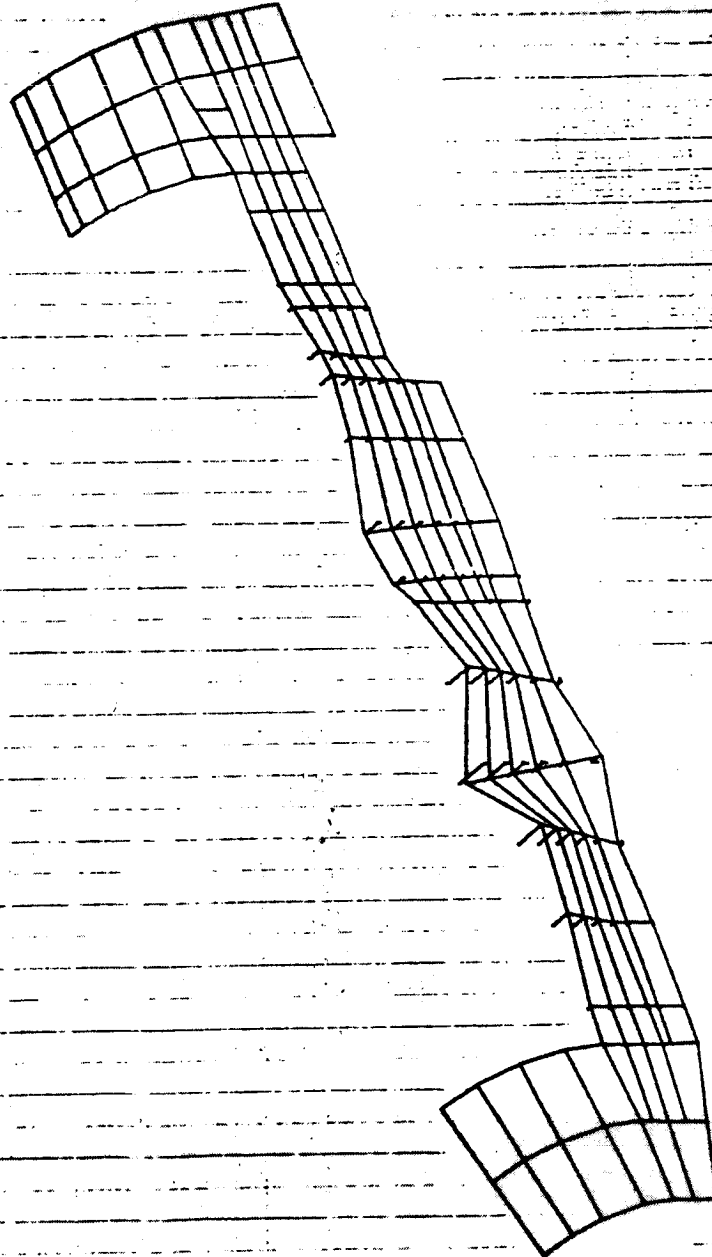
PHASE 1 - SUBSTRUCTURE ANALYSIS - BYNAM CASE 1 MODEL 9  
 BEING MADE BY LAMINAR FLOW ANALYSIS AT WIND TUNNEL/SCOTT  
 FREE AEROBIC FLOW AT INTERFACE  
 MODAL DETERM. SUBCASE 14 MODE 14 FREQ. 806.9470

14 10/10/70 1000-007, s 1.001.00000



PHASE 1. MINISTION FUELAGE-SYON CASES MODEL 2  
 BEING HALF OF JAWA-80 C EYF. TRAM. AT WING 0-2/DEPT. 3  
 FREE MOSES PAPER AT INTERFACE  
 MODAL DEPT. 14 MODE 14 PRCO. 000.3470

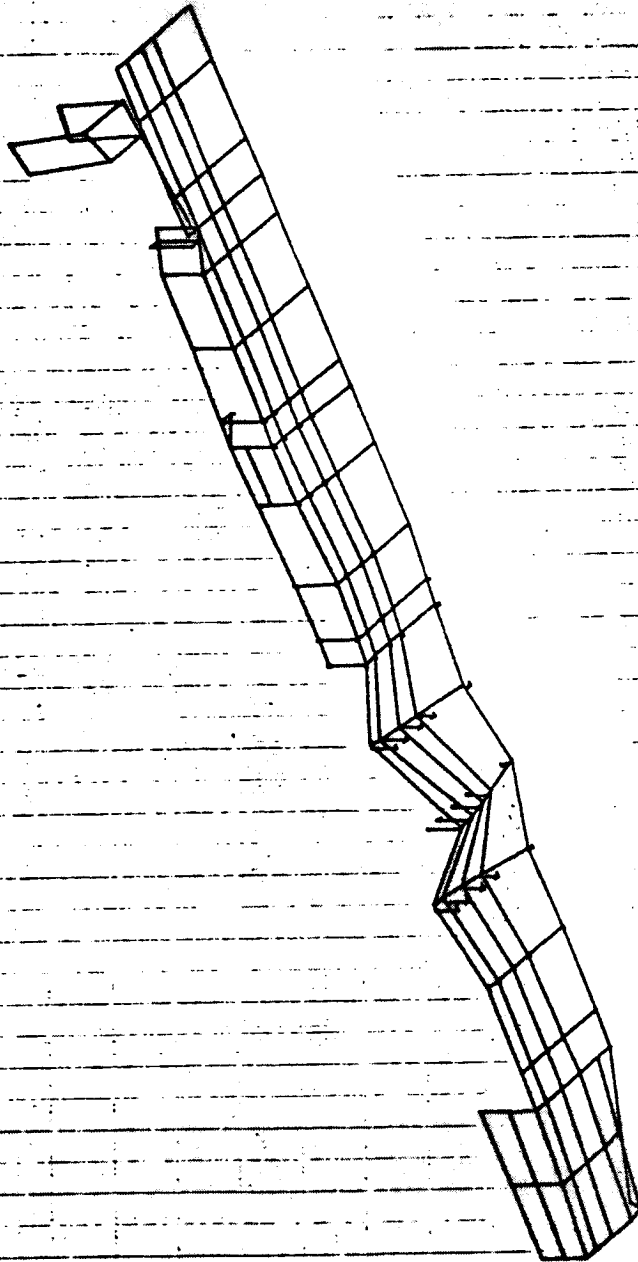
10/10/74 MAN-827, 0 1.00000000



PHASE 1 GIBBITER FUSELAGE-SYMM CASE) MODEL 2  
 SKIN HALF EFF. LONG. .85 EFF. TRANS. AT WING (8-2/2577.)  
 FREE MODES FIXED AT INTERFACE  
 MODAL DEFORM. SURFACE IS MODE 15 FREQ. 840.1012

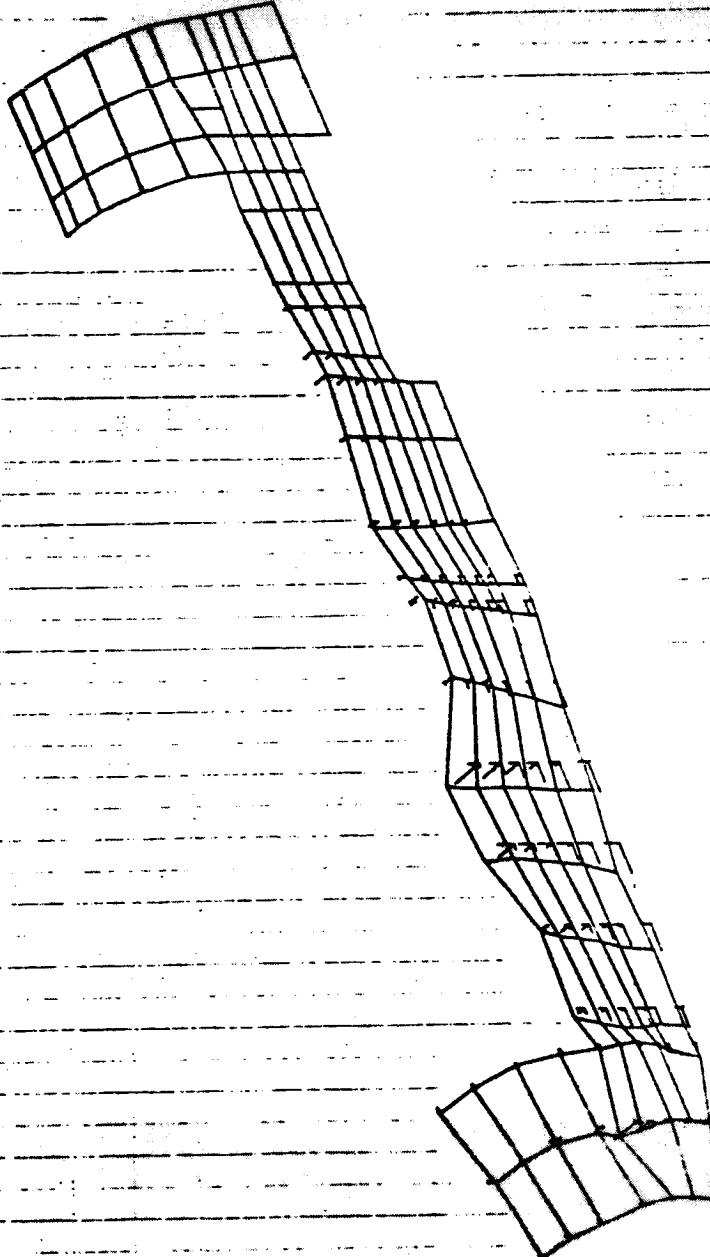


10 10/10/74 100-007, 0 1, 00000000



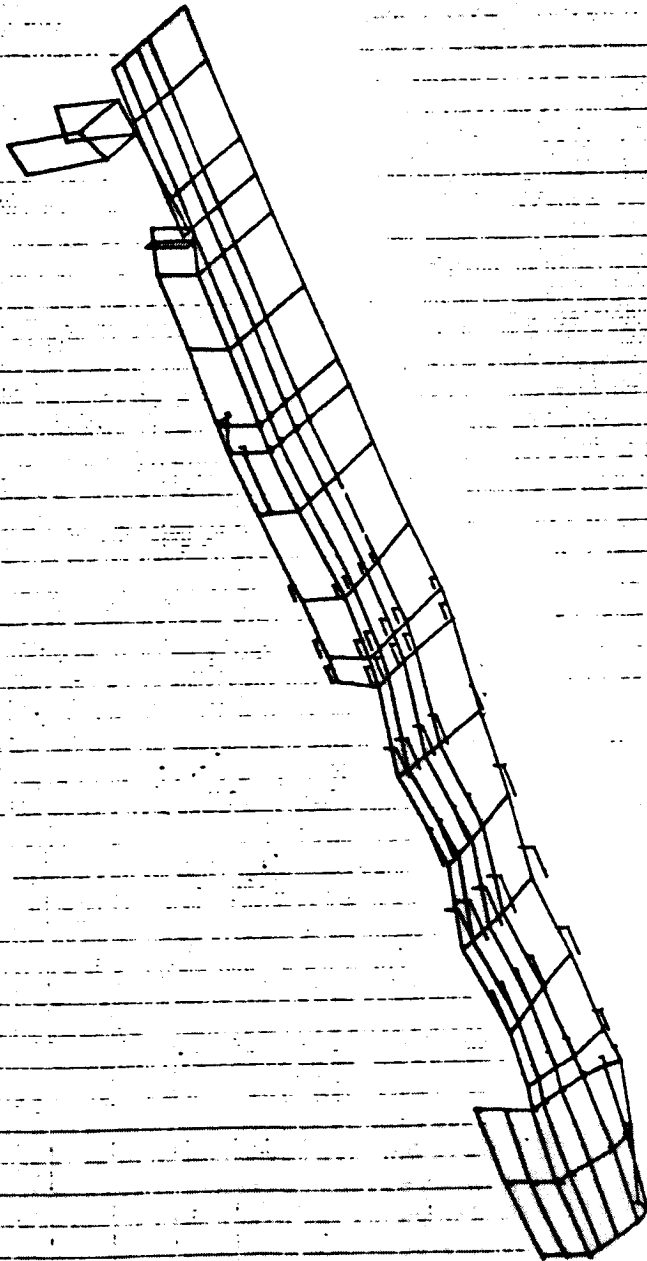
PHASE 1. ORBITER FUSELAGE-STYAN CASE) MODEL 2  
BEING HALF EFF. LONG. (88 ( EFF. TRANS. AT WING (8-2/20FF.)  
FREE MOVED FIVE AT INTERFAC  
MODAL DEFORM. SURFACE IS MODC IS FREE. 840.1012

**F**



1. THE UNITED STATES OF AMERICA  
2. THE STATE OF TEXAS  
3. THE COUNTY OF DALLAS  
4. THE CITY OF DALLAS  
5. THE DISTRICT OF COLUMBIA  
6. THE DISTRICT OF COLUMBIA  
7. THE DISTRICT OF COLUMBIA  
8. THE DISTRICT OF COLUMBIA  
9. THE DISTRICT OF COLUMBIA  
10. THE DISTRICT OF COLUMBIA  
11. THE DISTRICT OF COLUMBIA  
12. THE DISTRICT OF COLUMBIA  
13. THE DISTRICT OF COLUMBIA  
14. THE DISTRICT OF COLUMBIA  
15. THE DISTRICT OF COLUMBIA  
16. THE DISTRICT OF COLUMBIA  
17. THE DISTRICT OF COLUMBIA  
18. THE DISTRICT OF COLUMBIA  
19. THE DISTRICT OF COLUMBIA  
20. THE DISTRICT OF COLUMBIA  
21. THE DISTRICT OF COLUMBIA  
22. THE DISTRICT OF COLUMBIA  
23. THE DISTRICT OF COLUMBIA  
24. THE DISTRICT OF COLUMBIA  
25. THE DISTRICT OF COLUMBIA  
26. THE DISTRICT OF COLUMBIA  
27. THE DISTRICT OF COLUMBIA  
28. THE DISTRICT OF COLUMBIA  
29. THE DISTRICT OF COLUMBIA  
30. THE DISTRICT OF COLUMBIA  
31. THE DISTRICT OF COLUMBIA  
32. THE DISTRICT OF COLUMBIA  
33. THE DISTRICT OF COLUMBIA  
34. THE DISTRICT OF COLUMBIA  
35. THE DISTRICT OF COLUMBIA  
36. THE DISTRICT OF COLUMBIA  
37. THE DISTRICT OF COLUMBIA  
38. THE DISTRICT OF COLUMBIA  
39. THE DISTRICT OF COLUMBIA  
40. THE DISTRICT OF COLUMBIA  
41. THE DISTRICT OF COLUMBIA  
42. THE DISTRICT OF COLUMBIA  
43. THE DISTRICT OF COLUMBIA  
44. THE DISTRICT OF COLUMBIA  
45. THE DISTRICT OF COLUMBIA  
46. THE DISTRICT OF COLUMBIA  
47. THE DISTRICT OF COLUMBIA  
48. THE DISTRICT OF COLUMBIA  
49. THE DISTRICT OF COLUMBIA  
50. THE DISTRICT OF COLUMBIA  
51. THE DISTRICT OF COLUMBIA  
52. THE DISTRICT OF COLUMBIA  
53. THE DISTRICT OF COLUMBIA  
54. THE DISTRICT OF COLUMBIA  
55. THE DISTRICT OF COLUMBIA  
56. THE DISTRICT OF COLUMBIA  
57. THE DISTRICT OF COLUMBIA  
58. THE DISTRICT OF COLUMBIA  
59. THE DISTRICT OF COLUMBIA  
60. THE DISTRICT OF COLUMBIA  
61. THE DISTRICT OF COLUMBIA  
62. THE DISTRICT OF COLUMBIA  
63. THE DISTRICT OF COLUMBIA  
64. THE DISTRICT OF COLUMBIA  
65. THE DISTRICT OF COLUMBIA  
66. THE DISTRICT OF COLUMBIA  
67. THE DISTRICT OF COLUMBIA  
68. THE DISTRICT OF COLUMBIA  
69. THE DISTRICT OF COLUMBIA  
70. THE DISTRICT OF COLUMBIA  
71. THE DISTRICT OF COLUMBIA  
72. THE DISTRICT OF COLUMBIA  
73. THE DISTRICT OF COLUMBIA  
74. THE DISTRICT OF COLUMBIA  
75. THE DISTRICT OF COLUMBIA  
76. THE DISTRICT OF COLUMBIA  
77. THE DISTRICT OF COLUMBIA  
78. THE DISTRICT OF COLUMBIA  
79. THE DISTRICT OF COLUMBIA  
80. THE DISTRICT OF COLUMBIA  
81. THE DISTRICT OF COLUMBIA  
82. THE DISTRICT OF COLUMBIA  
83. THE DISTRICT OF COLUMBIA  
84. THE DISTRICT OF COLUMBIA  
85. THE DISTRICT OF COLUMBIA  
86. THE DISTRICT OF COLUMBIA  
87. THE DISTRICT OF COLUMBIA  
88. THE DISTRICT OF COLUMBIA  
89. THE DISTRICT OF COLUMBIA  
90. THE DISTRICT OF COLUMBIA  
91. THE DISTRICT OF COLUMBIA  
92. THE DISTRICT OF COLUMBIA  
93. THE DISTRICT OF COLUMBIA  
94. THE DISTRICT OF COLUMBIA  
95. THE DISTRICT OF COLUMBIA  
96. THE DISTRICT OF COLUMBIA  
97. THE DISTRICT OF COLUMBIA  
98. THE DISTRICT OF COLUMBIA  
99. THE DISTRICT OF COLUMBIA  
100. THE DISTRICT OF COLUMBIA

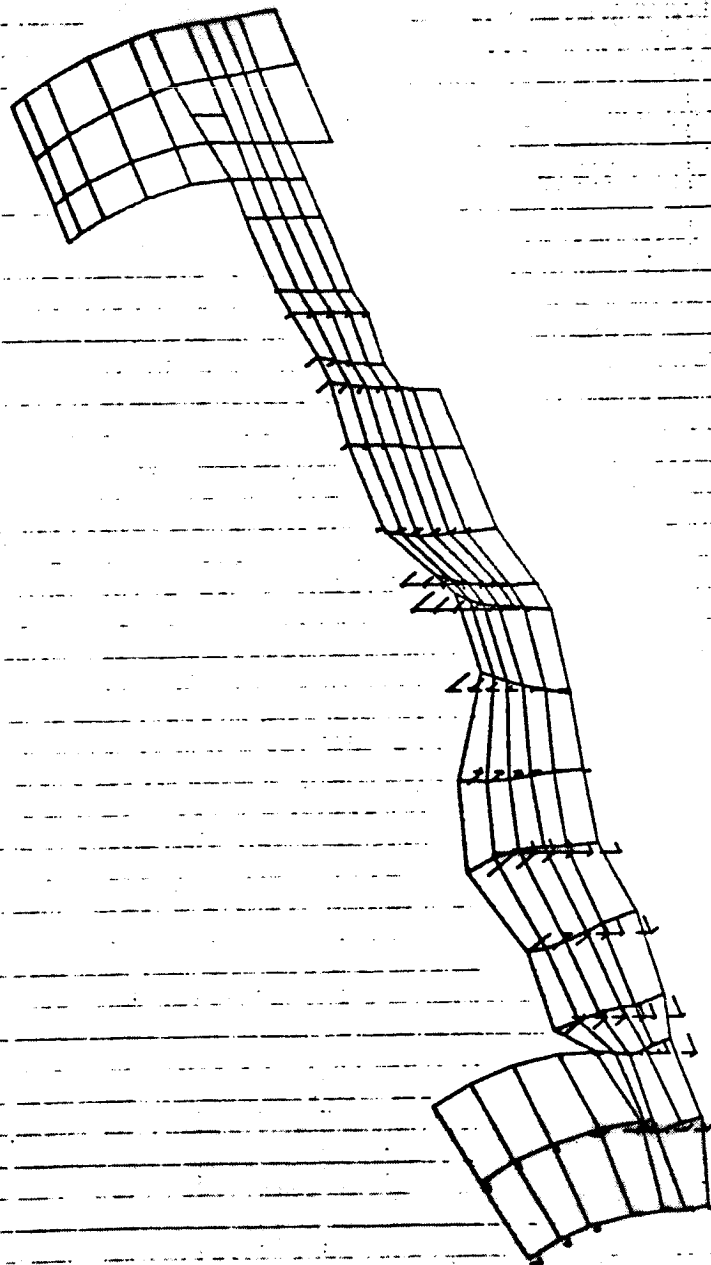
10 10/10/74 0000-0000, 0 1.00000000



PHASE 1: GEOMETRIC PREDICTION OF CASE MODEL 2  
SEEING HALF OF LENGTH OF CASE TRANS. AT MID-0.2/0.077.  
FREE MODES PRED. AT INTERFAC  
MODAL SUPP. SURFACE 10 MODE 10 PRED. 901.2587

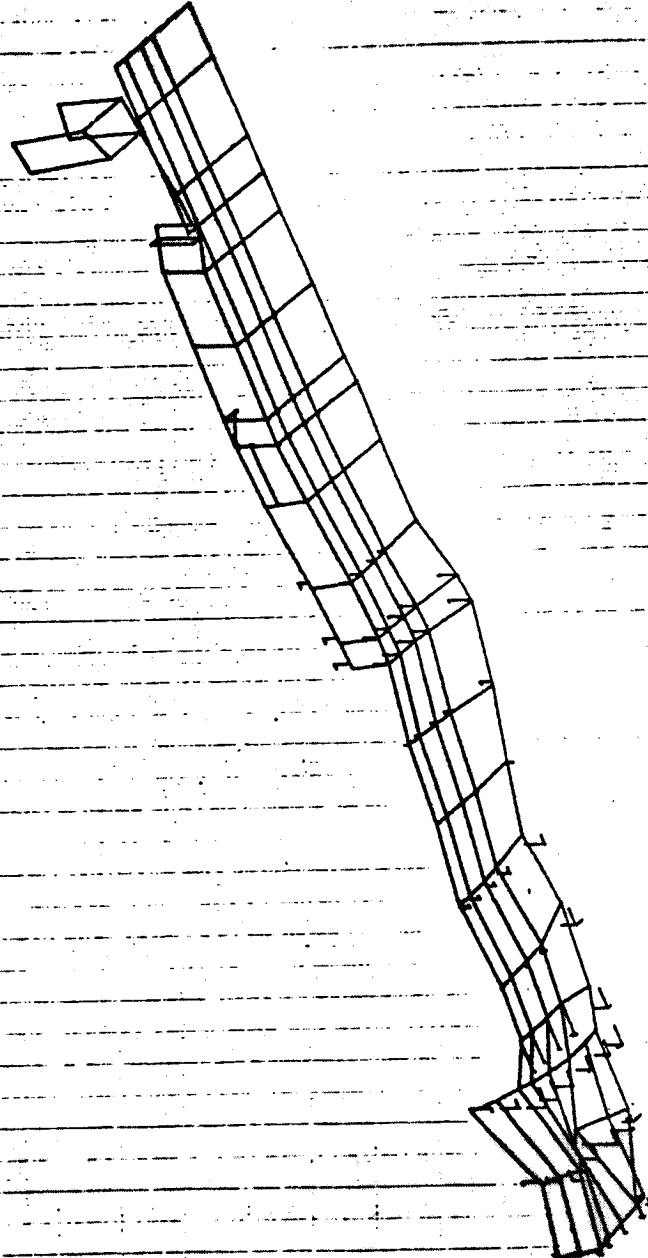
12/18/74 0000007, 0 1.00000000

74



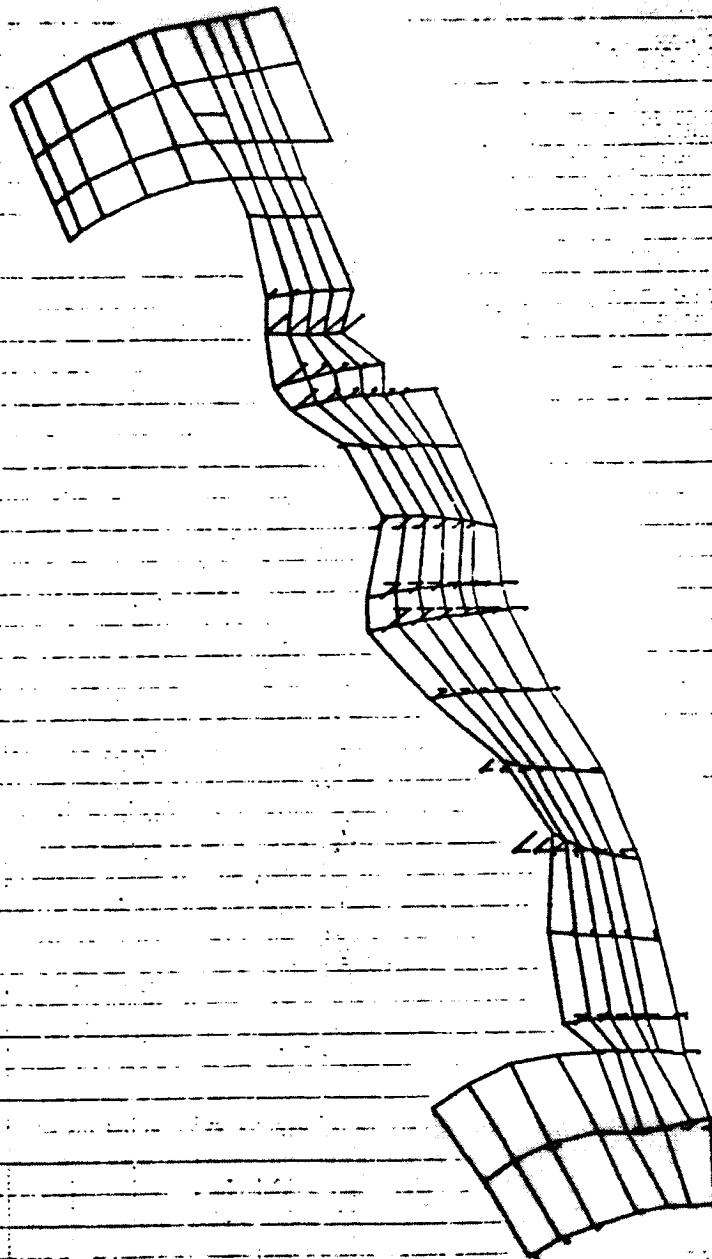
PHASE 1 CORBITER PURCHASE-ETM CASE) MODEL 2  
 SKIN MAP EFF.LONG..88 C EFF. TRANS. AT WING (8-2/9007.)  
 FREE MODES FIXED AT INTERFACE  
 MODAL DEFORM. SURFACE 17 MODE 17 FREQ. 633.8001

17 10/10/74 MAX-007. = 1.00000000



PHASE 1. CONSIDER FUSelage-SYAM CASE) MODEL 2  
 SKING HALF EFF. LONG. 881 EFF. TRANS. AT WING 0-2/3077.1  
 FREE MODES FIXED AT INTERFACE  
 MODAL DETON. SUBCASE 17 MODE 17 FREQ. 833.8001

10/10/74 0000-0007. = 1.00100010



PLANE 1 COMBINED FINELAGE-STYAN CASES MODEL 2  
 BEING HALF EFF. LOW. .851 EFF. TRANS. AT WING 10-1/2 EFF. 1  
 PRE: WINGS FINED AT INTERFAC  
 MODA DEFORM. SHCASE 19 MODE 10 FREQ. 976.3816

10 10-10-74 0000-007. - 1.00100010

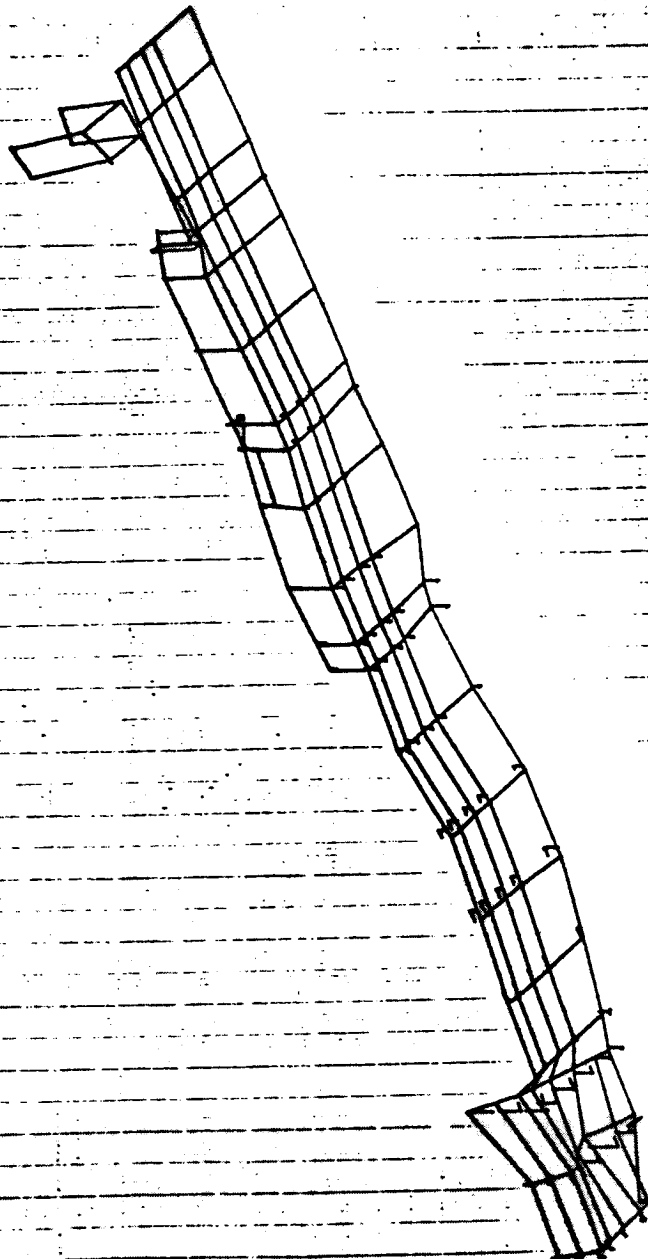
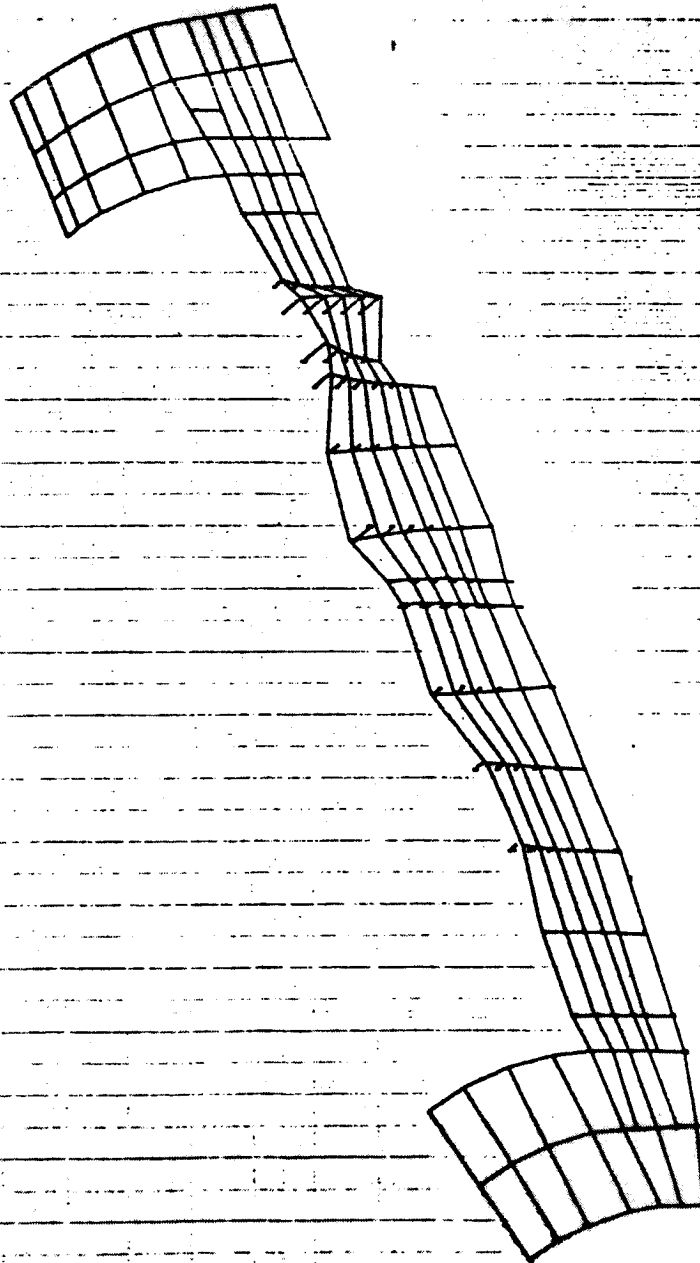


FIGURE 1. CURVED SEGMENTED WING. 2  
BEING HALF 0.75 LONG, 0.50 (0.75) THICK. AT WING-0.5/0.75.1  
FREE WING FILLED AT INTERFACE  
MODAL ORDER. SURFACE IS WING IS FREE. 0.75.0000

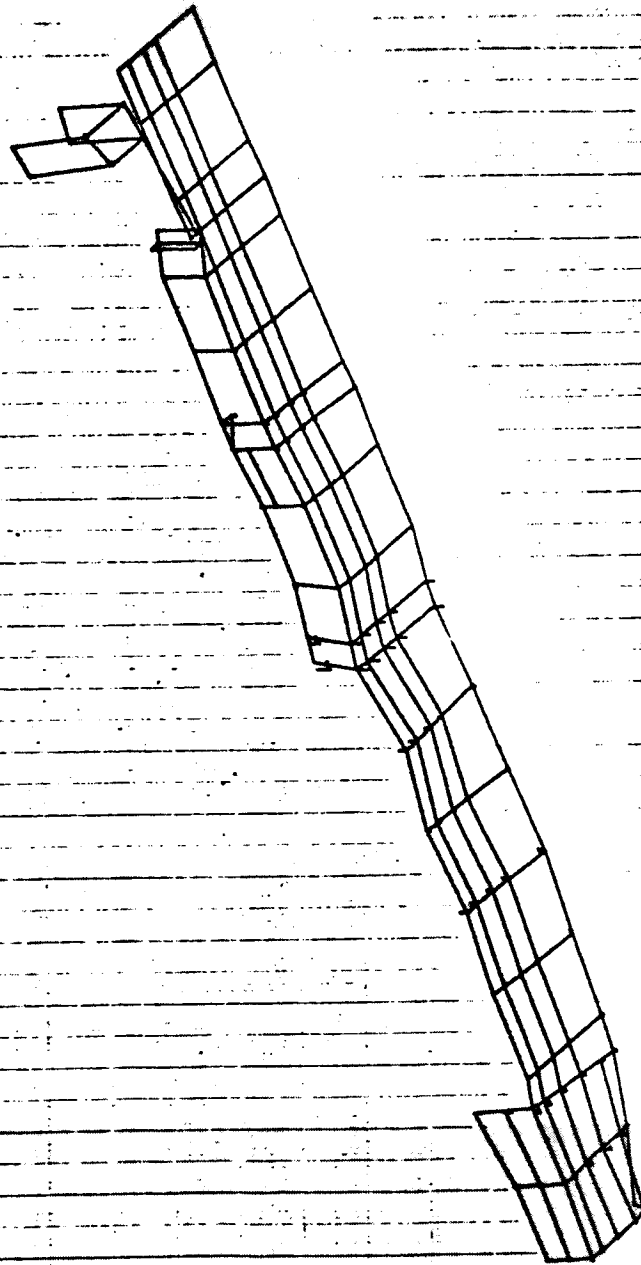
10/10/74 1001-007, 0 1.00015700



PHASE 1 CONSIDER PINGARE-SYMA CASE) MODEL 2  
 BEING HALF EFF. LOW. 001 EFF. TRANS. AT WING 10-2/3 (EFF.)  
 FREE MODES FIXED AT INTERFACE  
 MODAL DEFOR. SUBCASE 14 MODE 15 FREQ. 889.8300

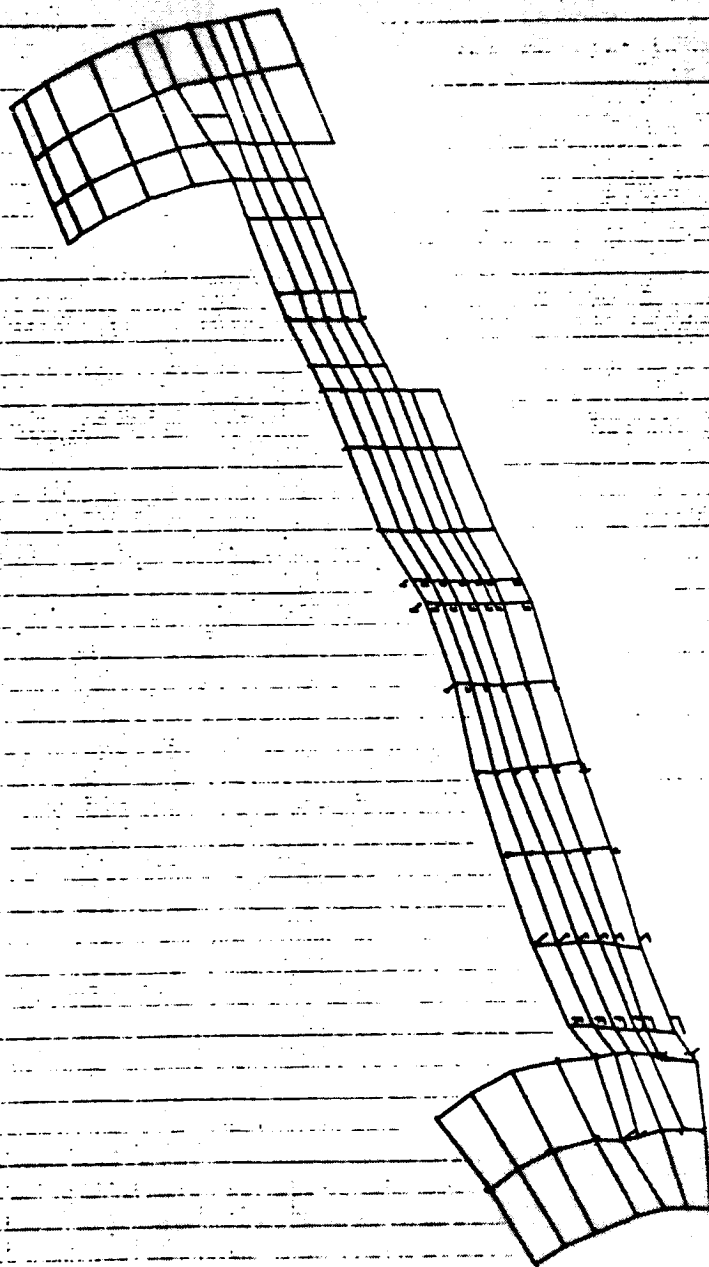


14 10/10/70 000-007, 0 1.00010700



PHASE 1. COBOLITE FUELAGE-STYAN CASED MODEL 2  
SEKING HALF EFF. LONG. 081 EFF. TRANS. AT WING (0-2/0077.)  
FREE MOSES FINED AT INTERFACE  
MODAL DETOR. SURFACE 14 MODE 14 FREQ. 000.0000

F



10/10/70 0000-0000, 0.00000000

PHASE 1, GEOMETRIC MODELING FROM CASE 2  
 DRUG HALF SP. LENS. 0.00000000, 0.00000000, 0.00000000, 0.00000000  
 FREE SURF. PLOTTED AT INTERFACE  
 MODAL DEF. SURF. 20 MODE 20 FREQ. 102.8132

10/10/74 1001-027. = 1.00000000

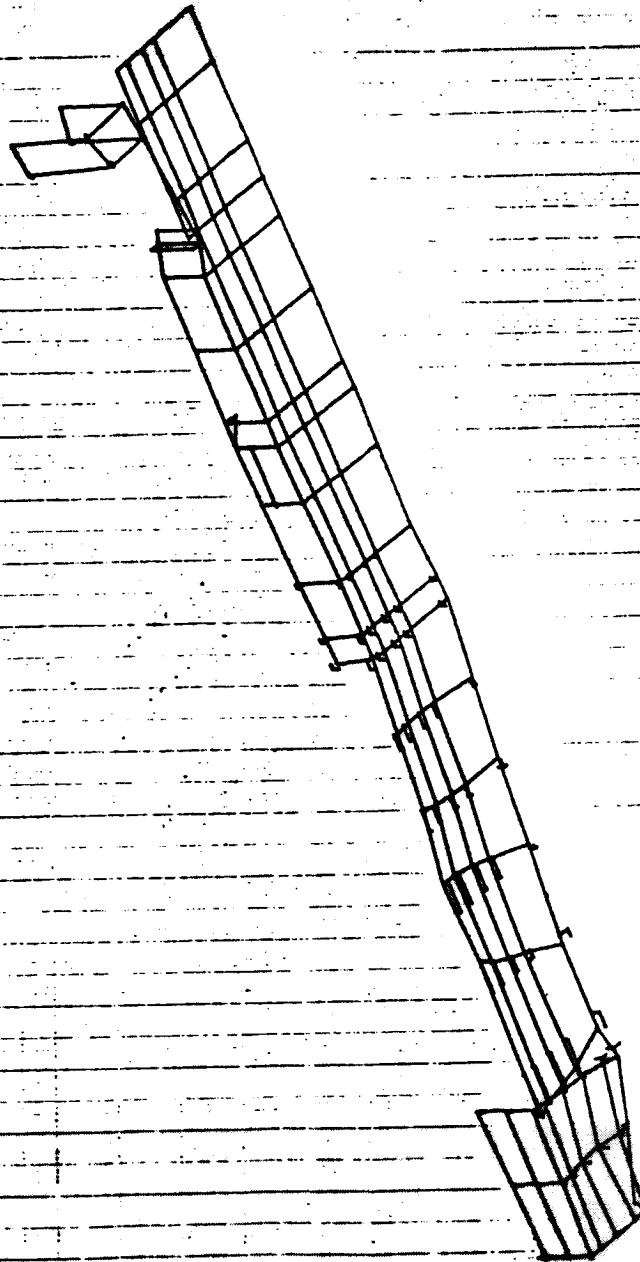
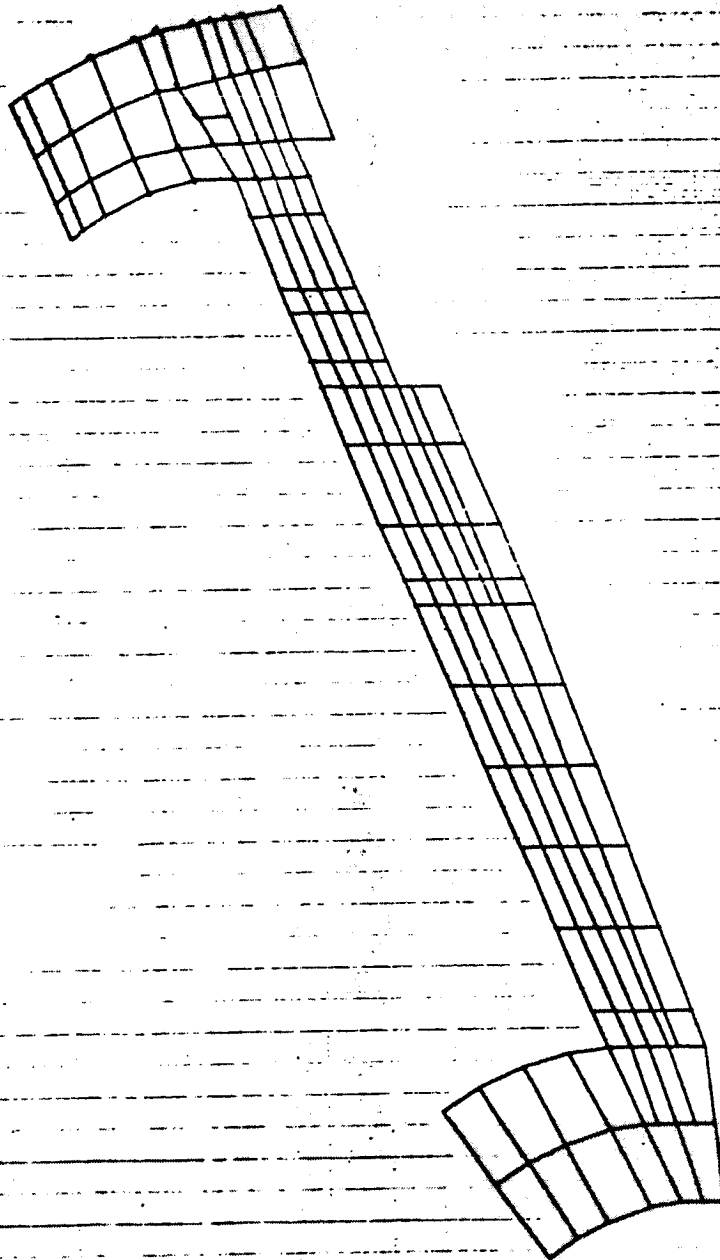


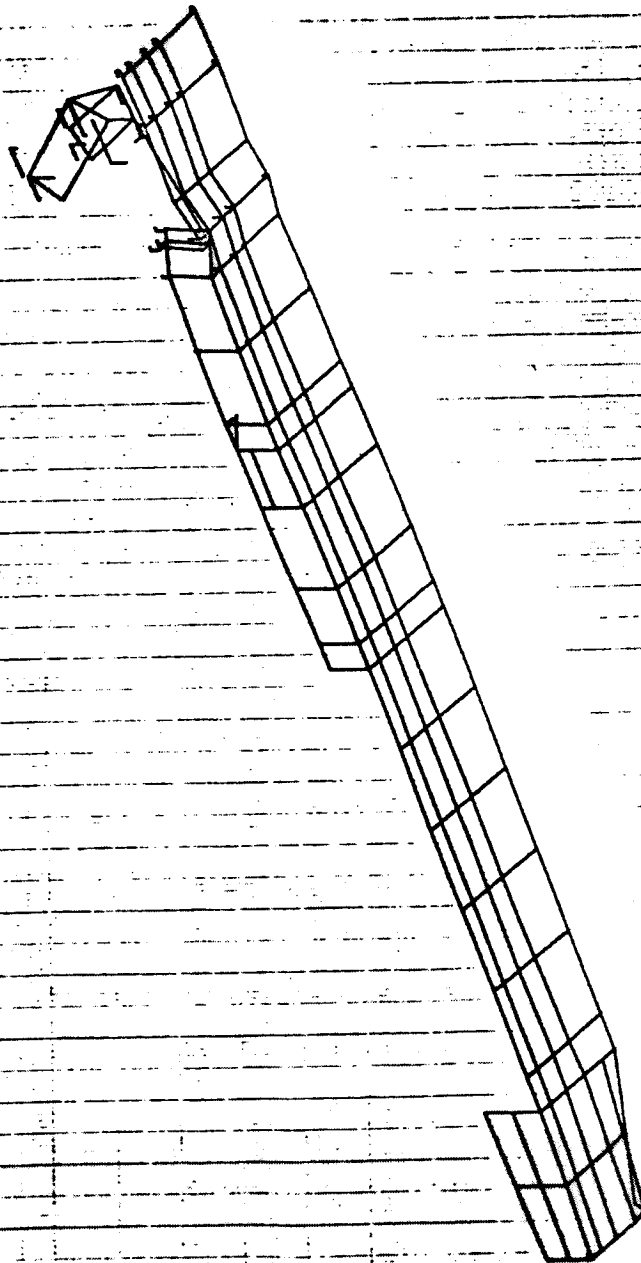
FIGURE 1. SHIP'S HULL - FROM CASED MODEL 2  
 SCALE: 1/4" = 1'-0". SEE CITY TRANS. AT MIND 00-2/0077.1  
 PREC. MODEL 00-2/0077.1  
 MODAL 00-2/0077.1

10/10/74 100-007. • 1.1748570



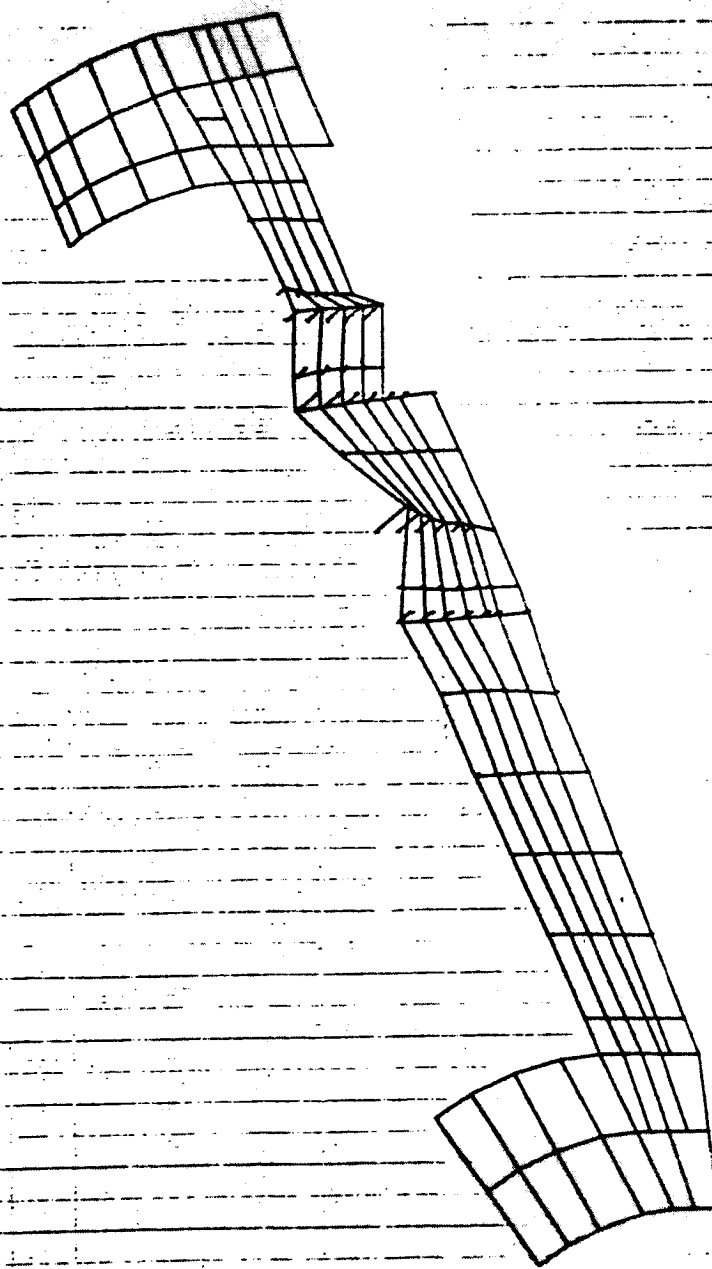
PHASE 1. COMBINED FUSELAGE-BYON CASE) MODEL 2  
BEING HALF OFF-LINE. (P1 177. TRANS. AT WING 02-2/2077.)  
FREE MODES FINISH AT INTERFACE  
MODAL VECTOR. SUBCASE 21 MODE 21 FREE. 10-1. 2008

21 18/10/74 MM-807, 0 1.17540020



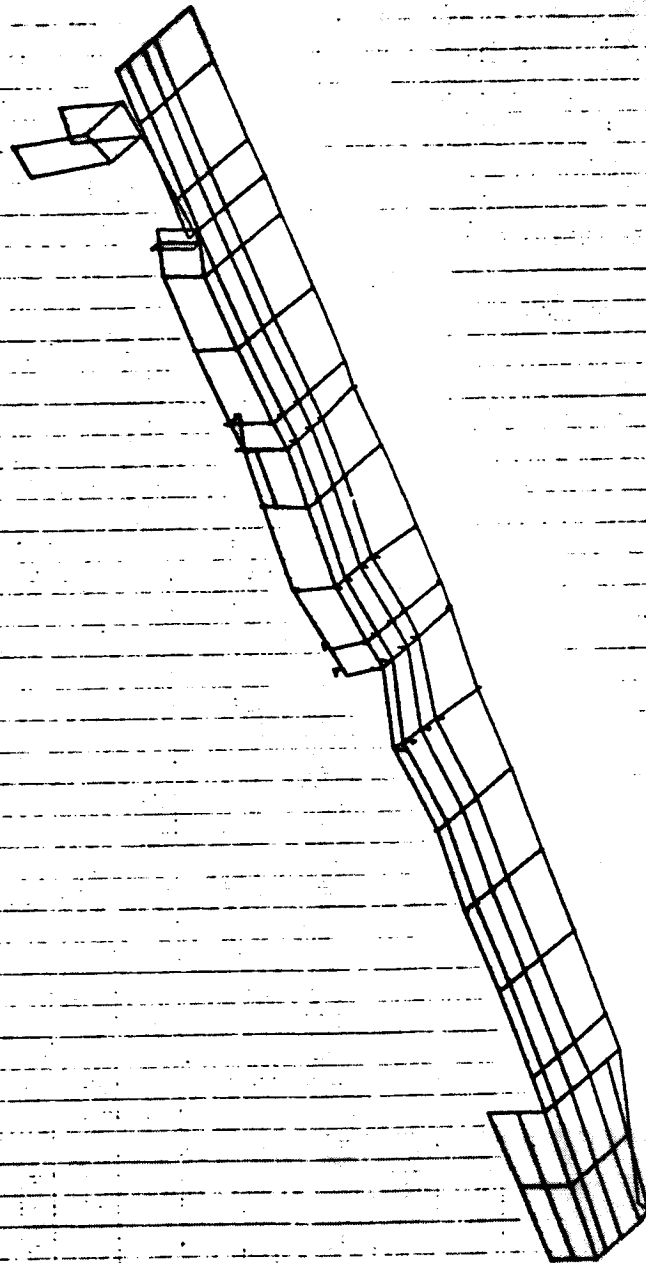
PHASE 1 CORBITER FUSELAGE-SYMM CASE: MODEL 2  
 BEING HALF EFF. LONG. 08 ( EFF. TRANS. AT WING 08+2/3277.)  
 FREE MODES PINED AT INTERFACE  
 MODAL DEFOS. SUBCASE 21 MODE 21 FREQ. 184.2308

10/10/74 0000-0000 0 1.00000000



PAGE 1 CONTINUED (WING-SPAN CASE) MODEL 2  
 DE 10 HALF SPAN, 1.00 CFF, TRANS AT WING-SPAN 1.00  
 PR 1.00000000 1.00000000  
 W 1.00000000 1.00000000 1.00000000 1.00000000

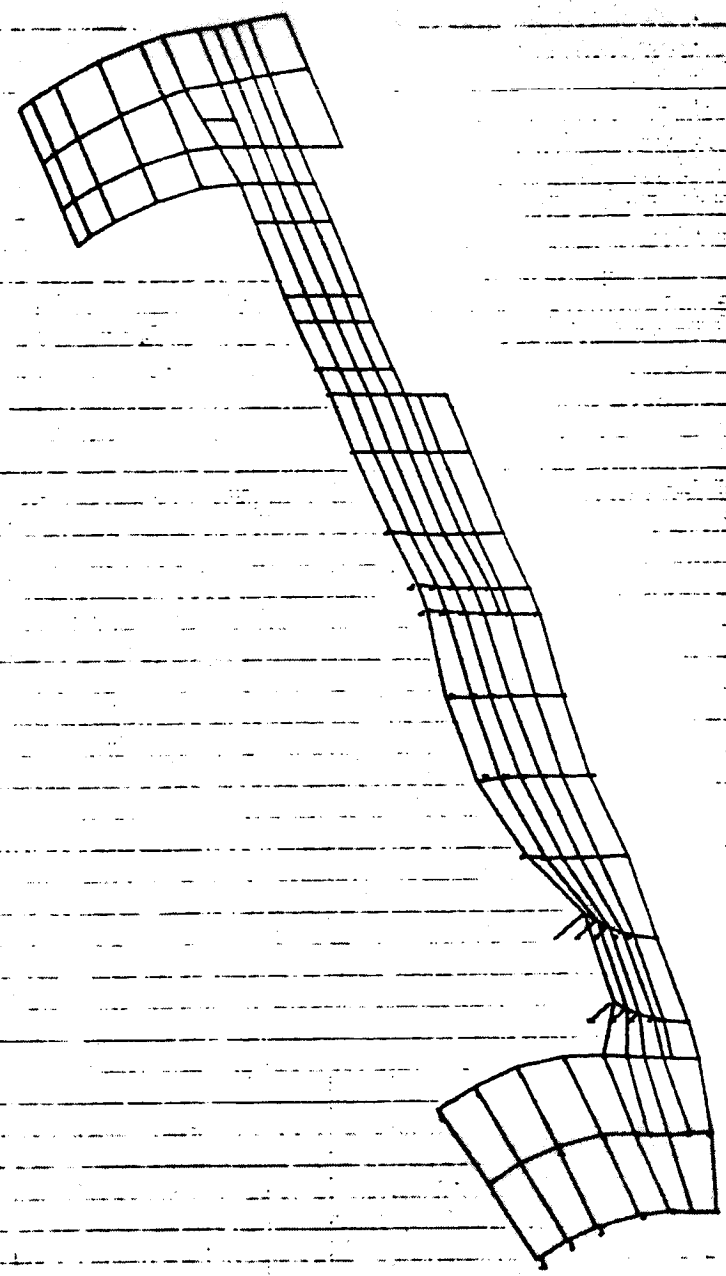
20 10/10/74 0000-0007. 0 1.00000000



PHASE 1. CONSIDER PURCHASE-ETOM CASE) MODEL 2  
BEING HALF EFF. LONG. 88 C EFF. TRANS. AT WIND 08-2/DEFT. 1  
FREE MODES FINED AT INTERFACE  
MODAL SECTOR. SUBCASE 22 MODE 22 FREQ. 176.3380

88

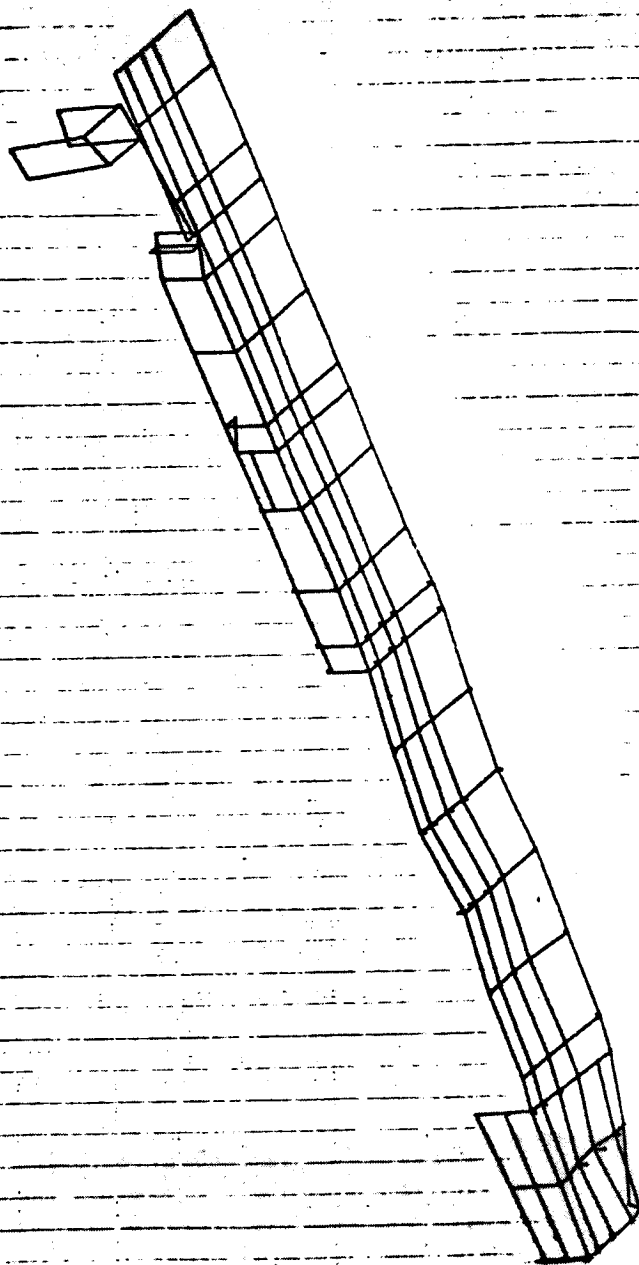
10/18/74 140 35 1.00000000



PHASE 1 GEOMETRIC PREDICTION-2D/3D CASES MODEL 2  
 BEING MADE OFF LINE-80 ( CTF, TRANS AT WING 60-8/8077.1)  
 FREE MODES PLOTTED AT INTERFACE  
 MODAL DEFOR. SUBCASE 23 MODE 23 FREQ. 811.0000

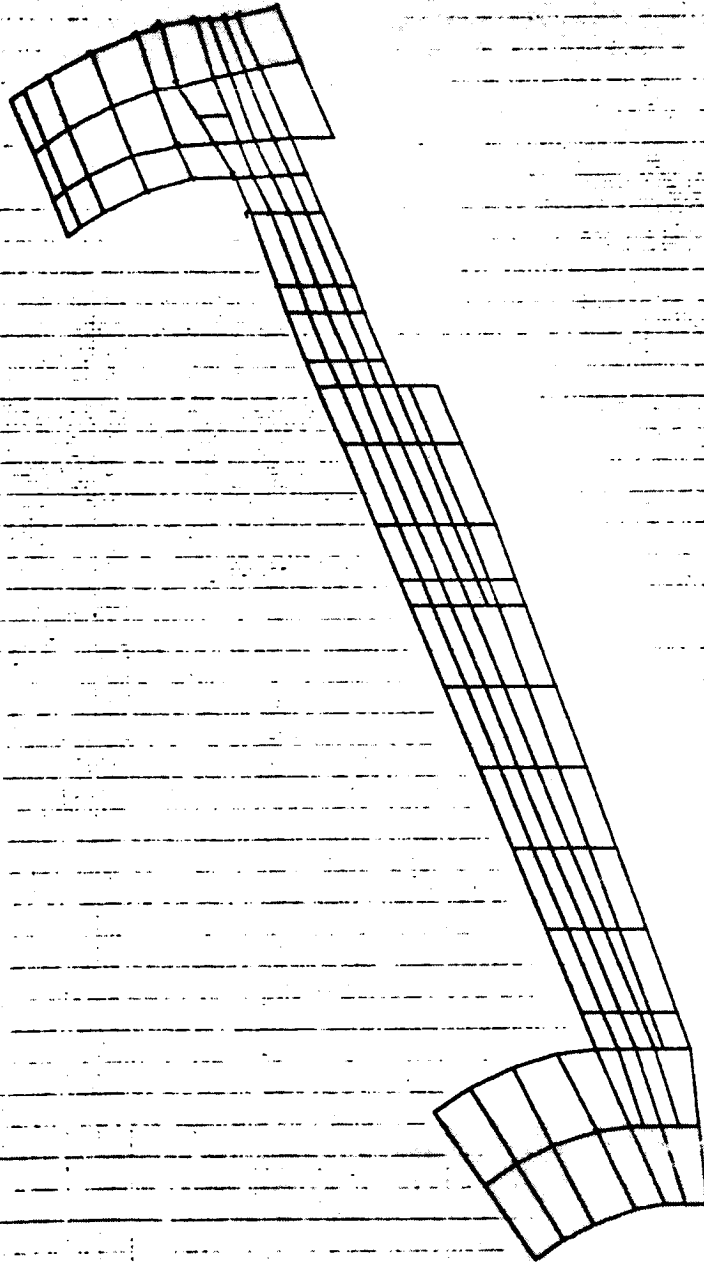


10/10/74 0000-007. = 1.00000000

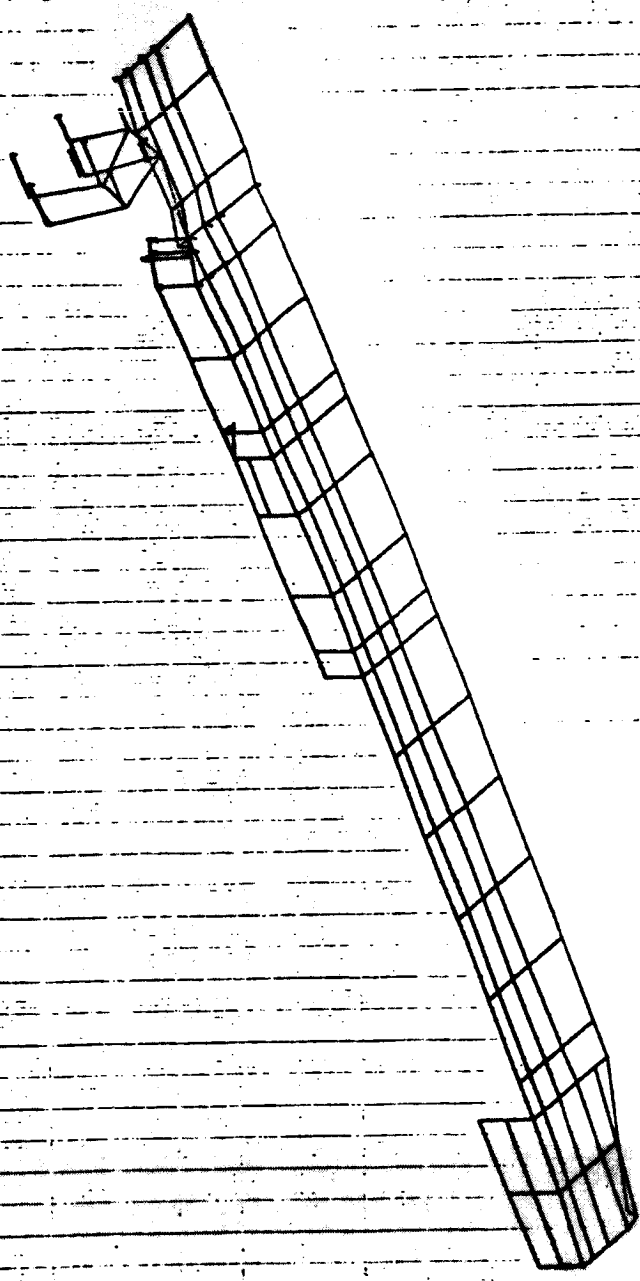


PHASE 1. COMBINED FUSELAGE-BYAM CASED MODEL 2  
 BEING HALF EFF. LONG. 881 EFF. TRANS. AT WING 0-2/2577.  
 FREE MODES FINES AT INTERFACE  
 MODAL DETOR. FUSELAGE 23 MODE 25 FREQ. 811.0886

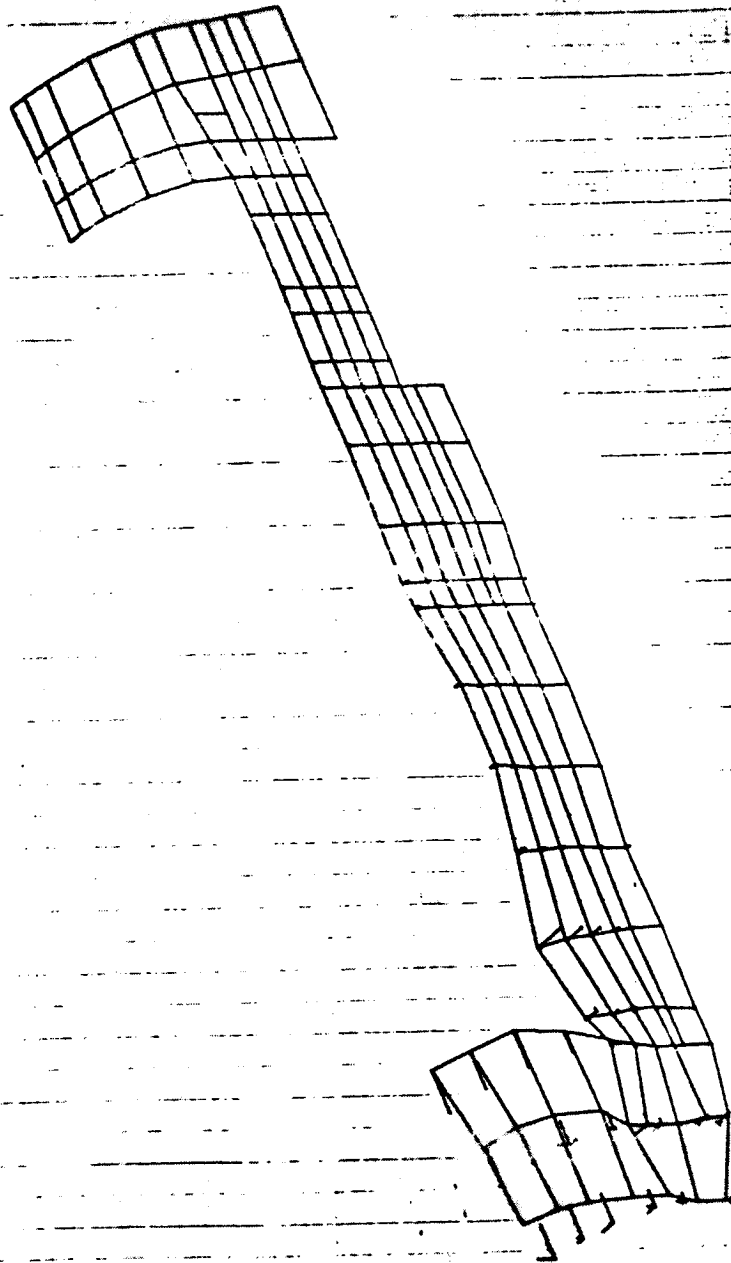
2



FOR : CONSUMER FINANCE-DEPT CASE NO. 1  
OF HALF CREDIT : 86 CREDIT TRANSFER AT 10%  
FOR : CREDIT FINANCIAL INSTITUTION  
IN ORDER, OUR OFFICE IS NOW IN THE



PHASE 1. OVERVIEW PERSPECTIVE VIEW CASE 2  
ORING MAP OF LINES, 00 ( 077, TRANS, AT WING 00-02/0077.)  
FREE OVERVIEW AT INTERFAC  
ACIAL 0070, 000000 24 MODE 24 FREQ. 001.0000



PHASE 1 CRUISER FUELAGE-PYRAM CASE) MODEL 2  
 SKIN HALF 577 LONG, 88 ( ETT. TRANS. AT MID 0-2/2000.)  
 FREE MODES PINGO AT INTERFACE  
 MODAL SECTOR, SUBCASE 25 MODE 25 FREQ. 648.7732

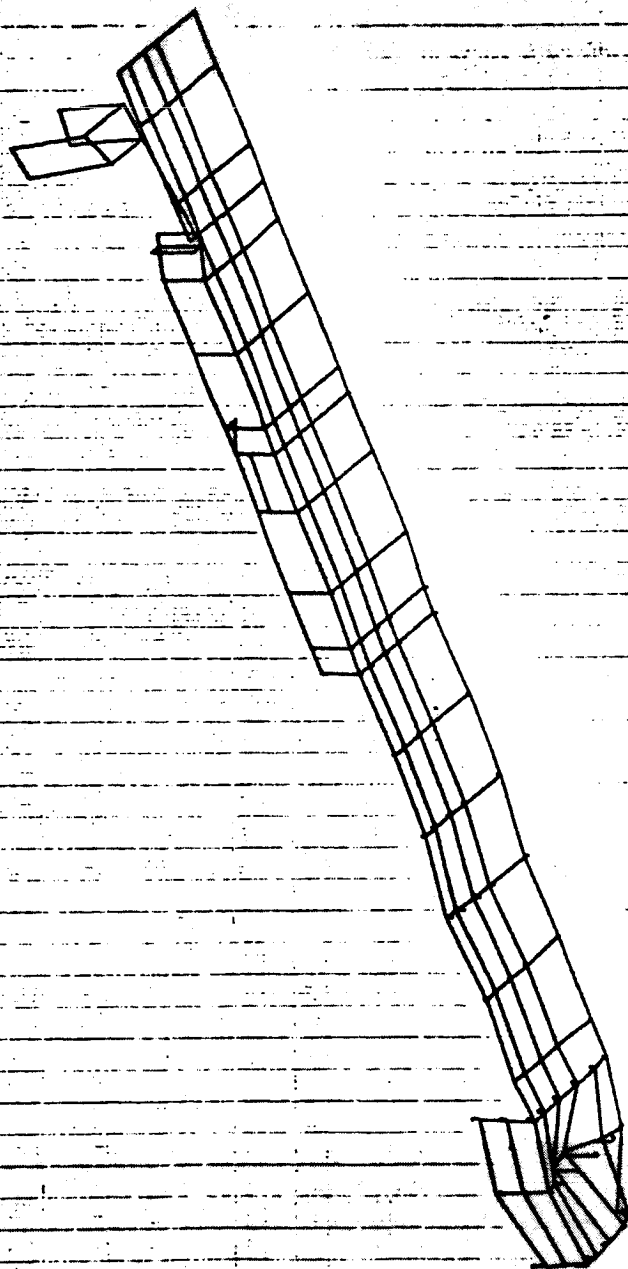
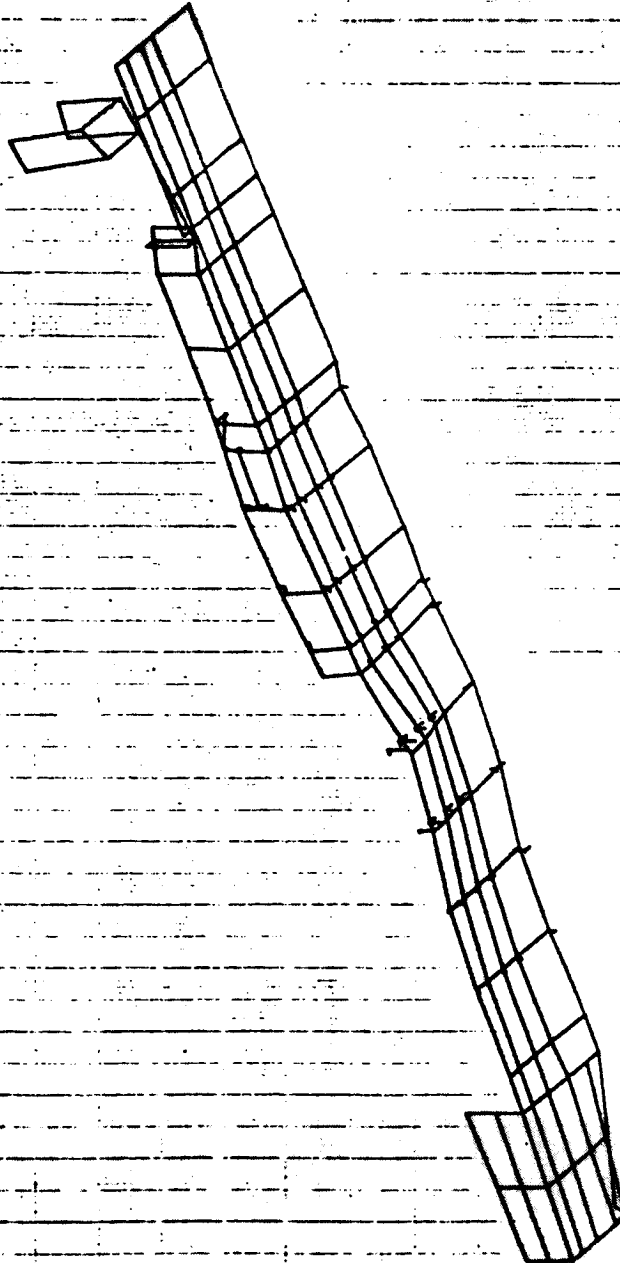


FIGURE 1. CABLED MODEL OF THE CABLE MODEL 2  
 BEING HALF OF THE CABLE MODEL 2  
 FREE MODEL FILLED BY INTERFACE  
 LOCAL SECTION. SURFACE 28 MODE 28 FREQUENCY 848.7132

1. CHRISTIAN BUREAU-SHOP CASE: MARCH 2  
HALL ST. LIND. DIST. CTY. TRANS. IN MARCH 1947 (NY 1)  
MOBILE FIRST AT INTERFAC  
DEFOR. DISCUSS TO MORE IN 1947 841.1120

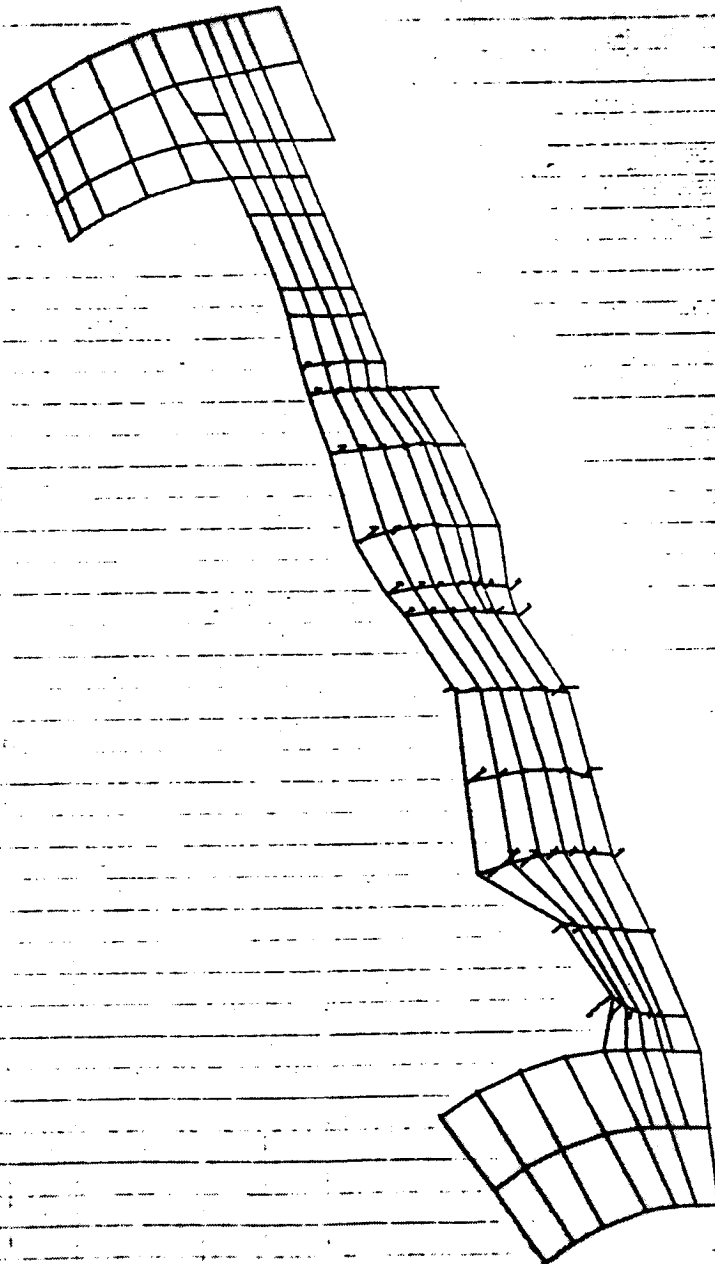
20 10/10/74 MM-007. • 1.0711340



PHASE 1. CROSSLER FUELAGE-STYAN CARDS MODEL 2  
ONING HALF EFF. LAMB. (80 C EFF. TRAMS. AT WING 80-0/0077.)  
FREE MOVED FROM AT INTERMEDIATE  
MODAL SCHEM. 00000000 20 MODC 20 PREC. 091.4120

84

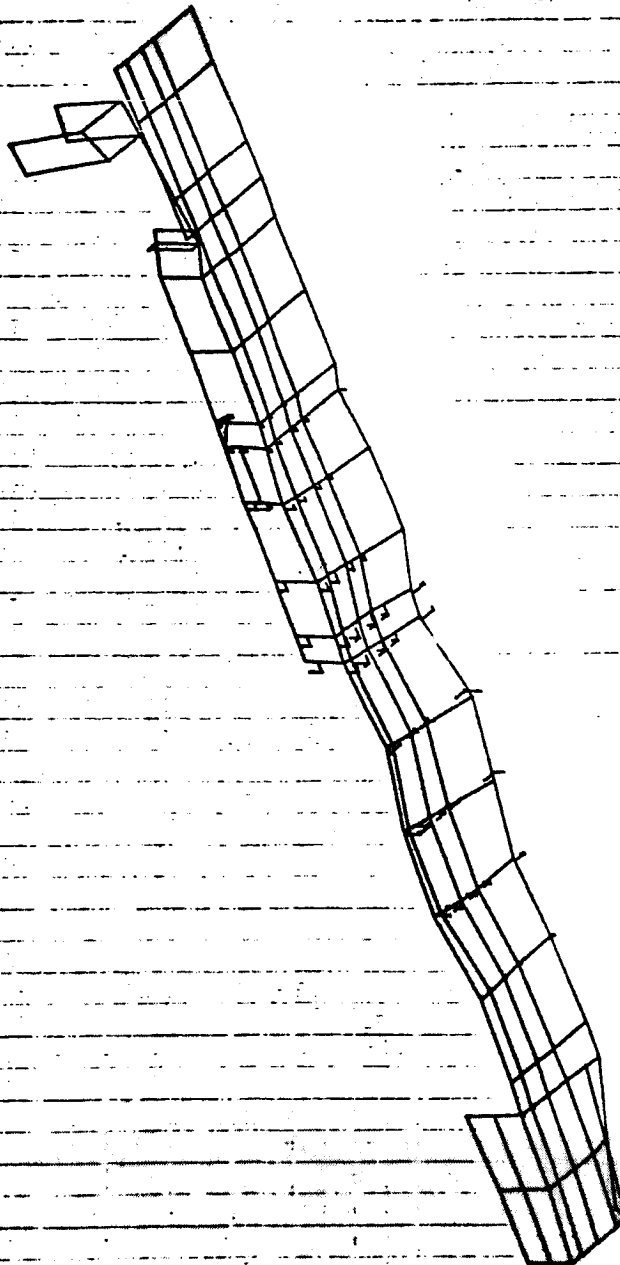
18/12/74 MMH-007, = 1.00000000



PHASE 1. CRIBITEX FUSELAGE-BYMA CASE) MODEL 2  
 SKINE HALF CTF.LONG.88 ( CTF. TRANS. AT WING (0-2/3077.)  
 FREE MODES FIXED AT INTERFACE  
 MODAL ORDER, SUBCASE 27 MODE 27 FREQ. 925.8884

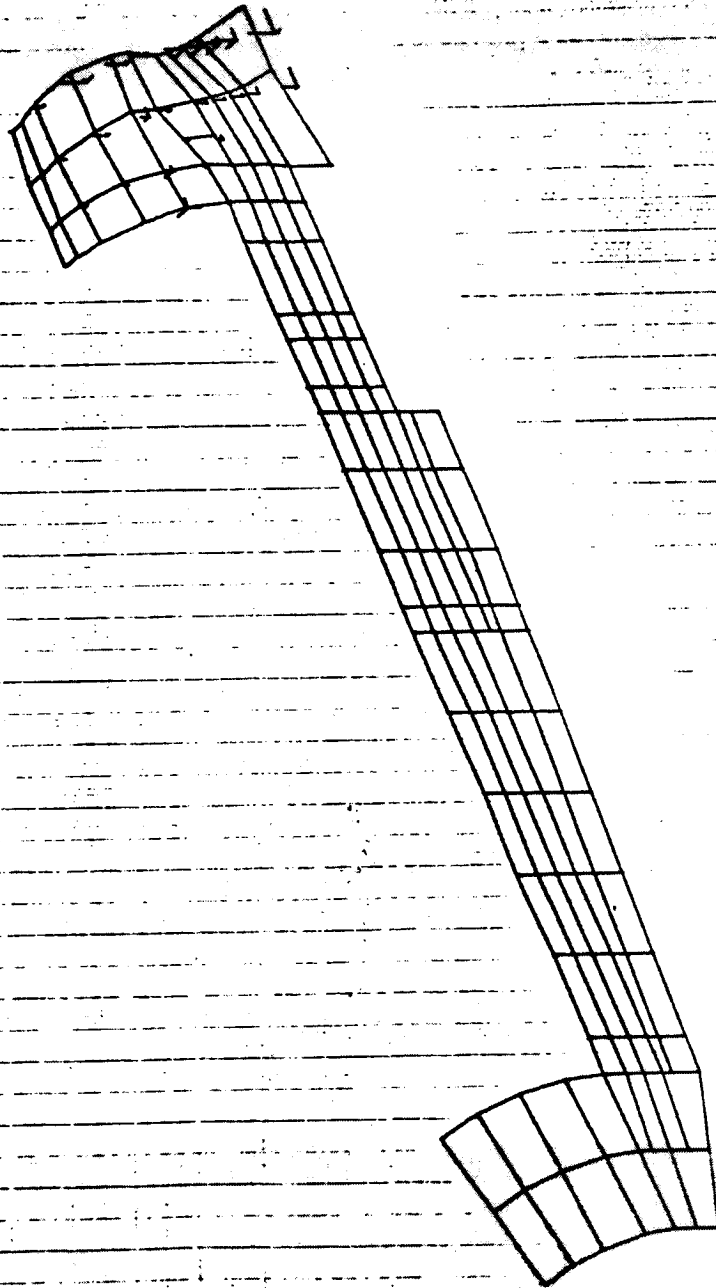


27 10/10/74 0000-007. = 1.00000000

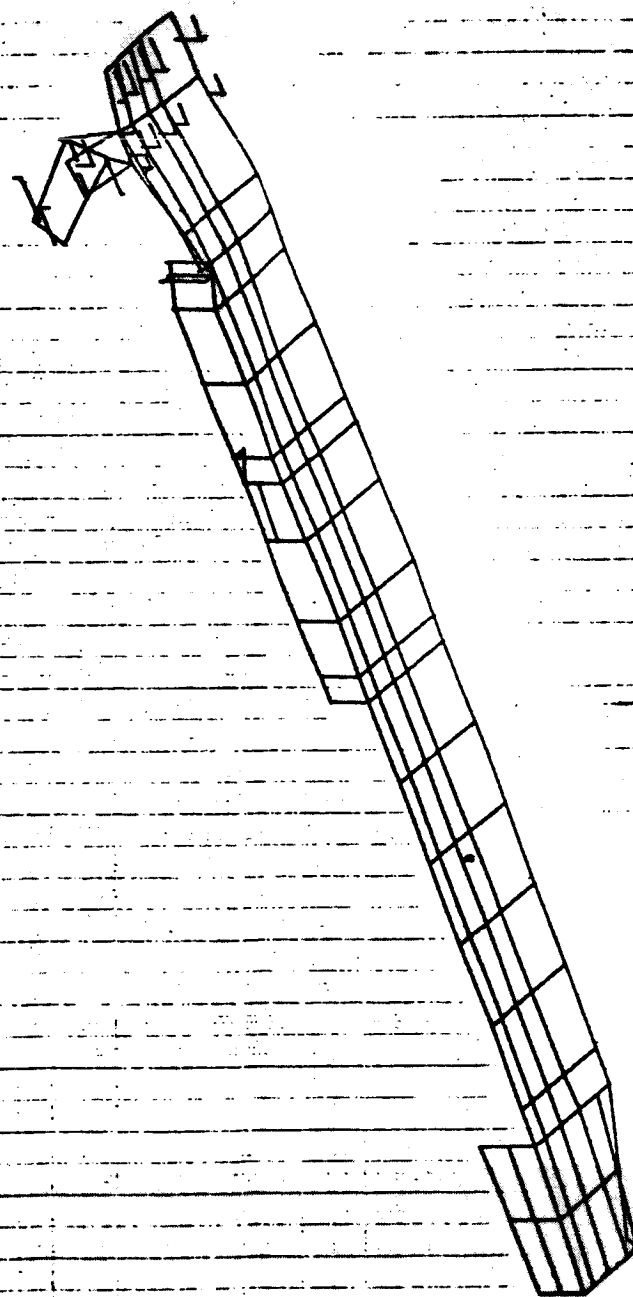


PHASE 1 CONSIDER FUSELAGE-6744 CASED MODEL 2  
 SKING HALF 677, LONG, 681 677, TRANS. AT WING 69-2/3077.  
 FREE MOVS PLOED AT INTERFACE  
 MODAL DETOR. SURFACE 27 MODE 27 FREQ. 428.8884

00 10-10-74 1000-007. 0 1.00000000

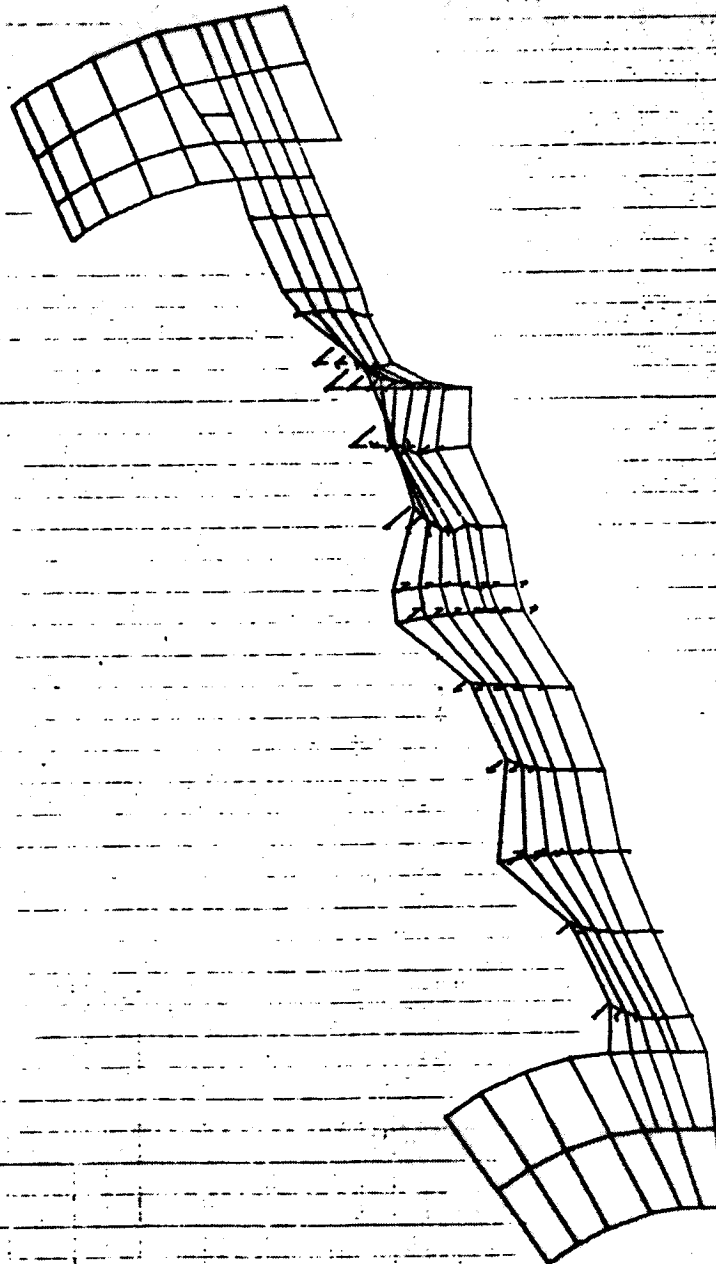


PHASE 1 CORBITER FURGLAND-87M CASE) MODEL 2  
BEING HALF CIP, LONG. 88 CIP, TRANS. AT WING (0-8/8077.)  
FREE MODES FIXED AT INTERFACE  
MODEL ORDER, SUBCASE 24 MODEL 20 FIG. 947-8731

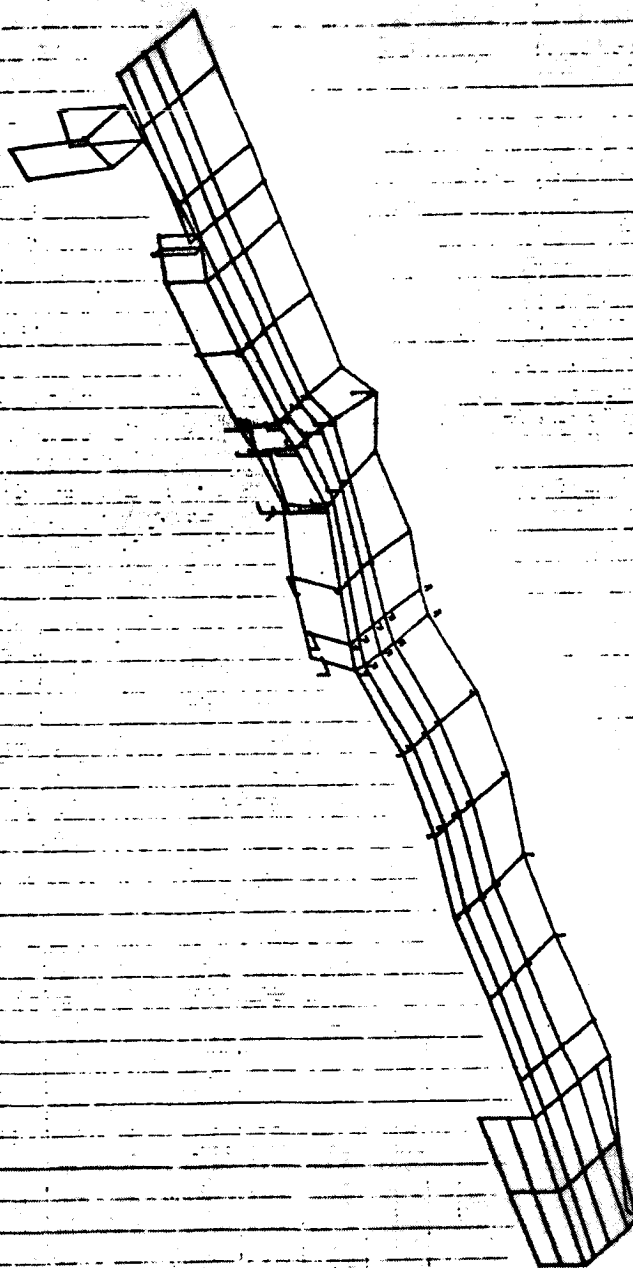


PHASE 1 CONSIDER FINESTAGE-5700 CASE1 MODEL 2  
 BEING HALF ETT-LORE-00 ( ETT-TRANS-AT WING-02/2077 )  
 FREE MODES FINED AT INTERFACE  
 MODAL VECTOR SURFACE 26 MODE 26 FREQ. 117.6081

00 10/10/74 0000-007. 0 1.00000000

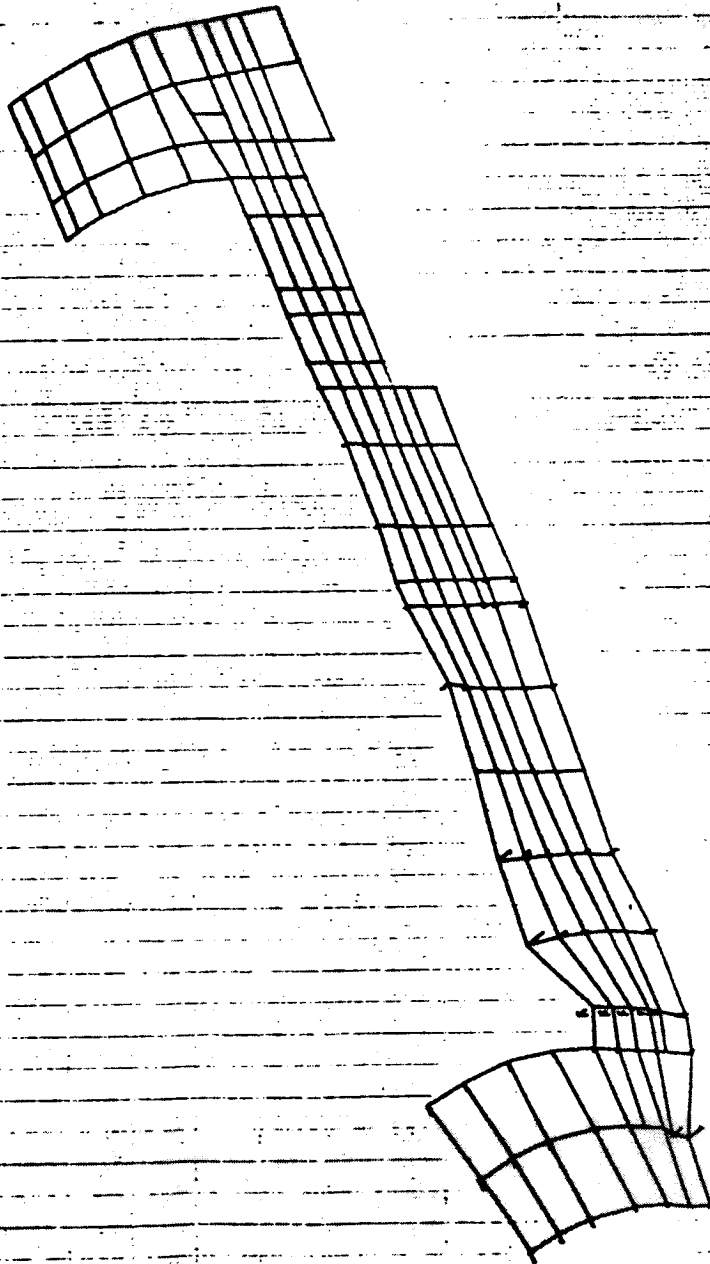


PHASE 1. GEOMETRIC FINISHING - SYMM. CASE. MODEL 8  
 BEING HALF ETT. LONG. 0.88 ( ETT. TRANS. AT WING 0.82/0.077.)  
 FREE MODES FIXED AT INTERFACE  
 MODAL DETON. SURFACE 24 MODE 24 FREQ. 488.8284



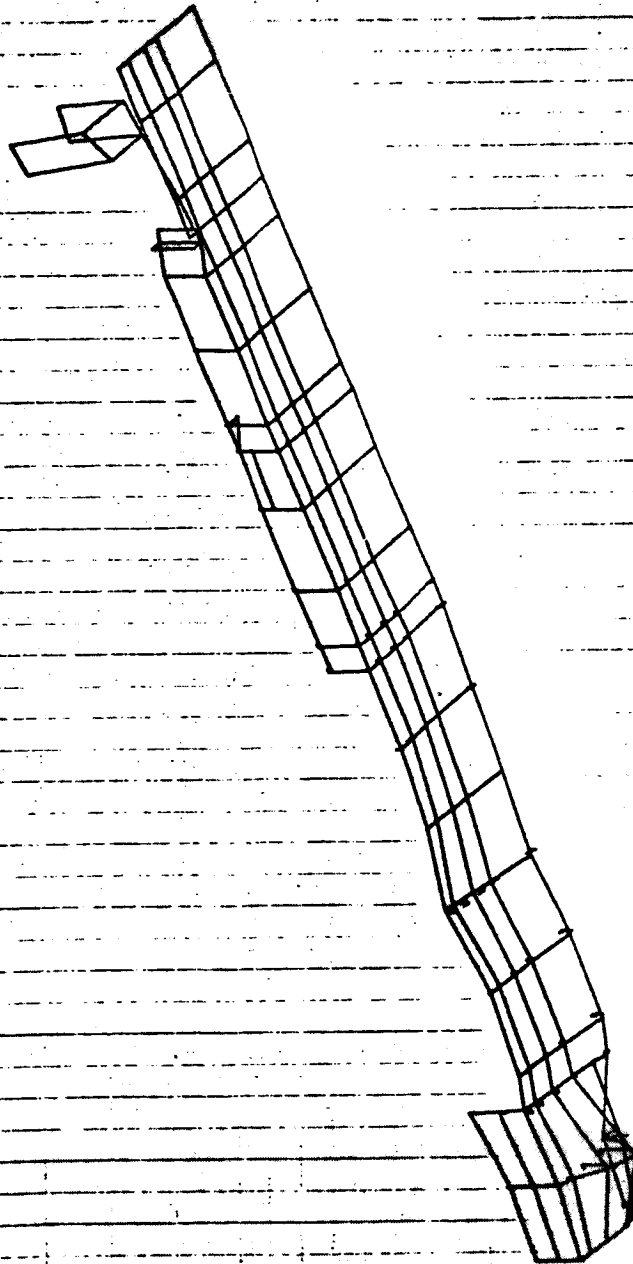
PHASE 1. GEOMETRIC MODELING - STAN GARD MODEL 2  
 SKIN HALF EFF. LING. .001 EFF. TRANS. AT WING-02/REFF. 1  
 FREE MODES FINED AT INTERFACE  
 MODAL ANALYSIS. BARRAGE 24 MODE 24 FREQ. 988.0284

67 10/10/74 100-007, 0 1, 0 000000



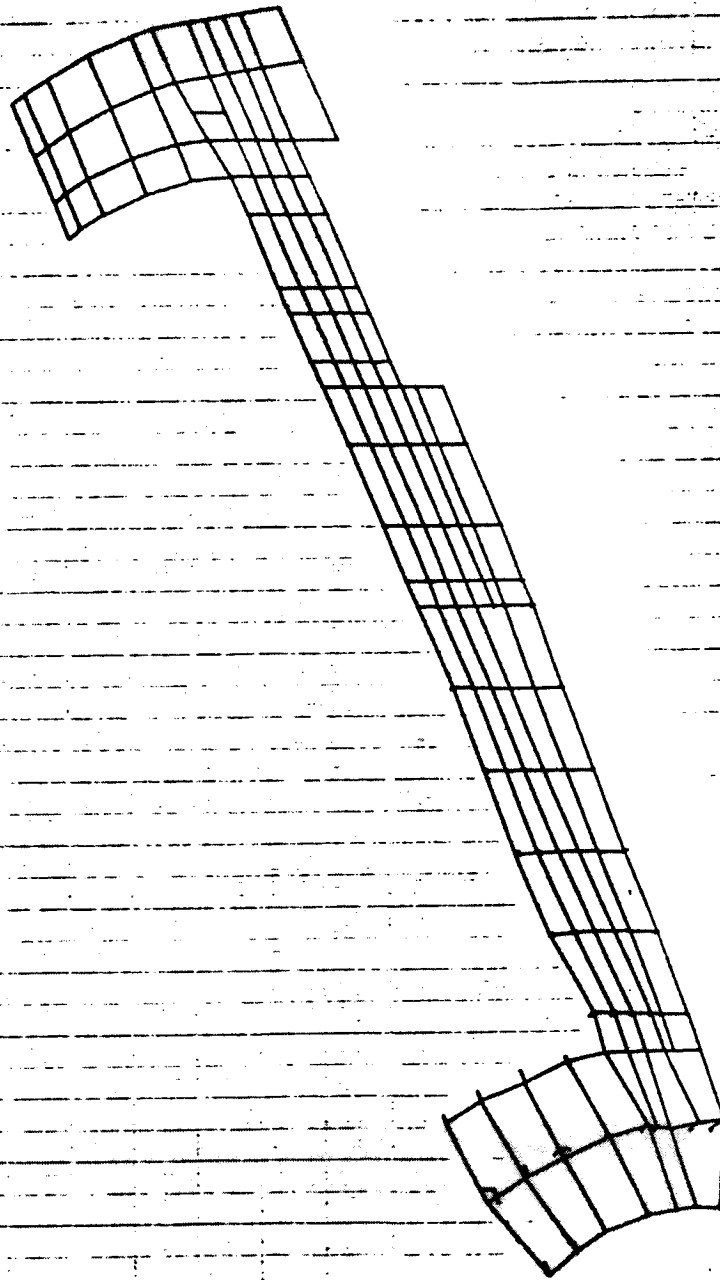
PHASE 1 CONSIDER FINE-SCALE-SYM CASE) MODE 2  
 SKIN HALF EYE LONG, BE (EYE, TRANS, AT MINOR-02/0077.)  
 FREE MODES FIXED AT INTERFACE  
 MODAL ORDER, SUBCASE 30 MODE 30 FREQ. 149.8468

20 10/10/74 100-007, 0 1, 0-00000000



PHASE 1 GEOMETRIC ANALYSIS (SYNTHESIS) MODEL 8  
 1000 HALF CPT. LAMB. 0.01 CPT. TRANS. AT WING 0-2/0.0177.  
 FREE BOUNDARY FLOW AT INTERFACE  
 LOCAL DEFER. SURFACE 30 MODE 30 FREQ. 940.5000

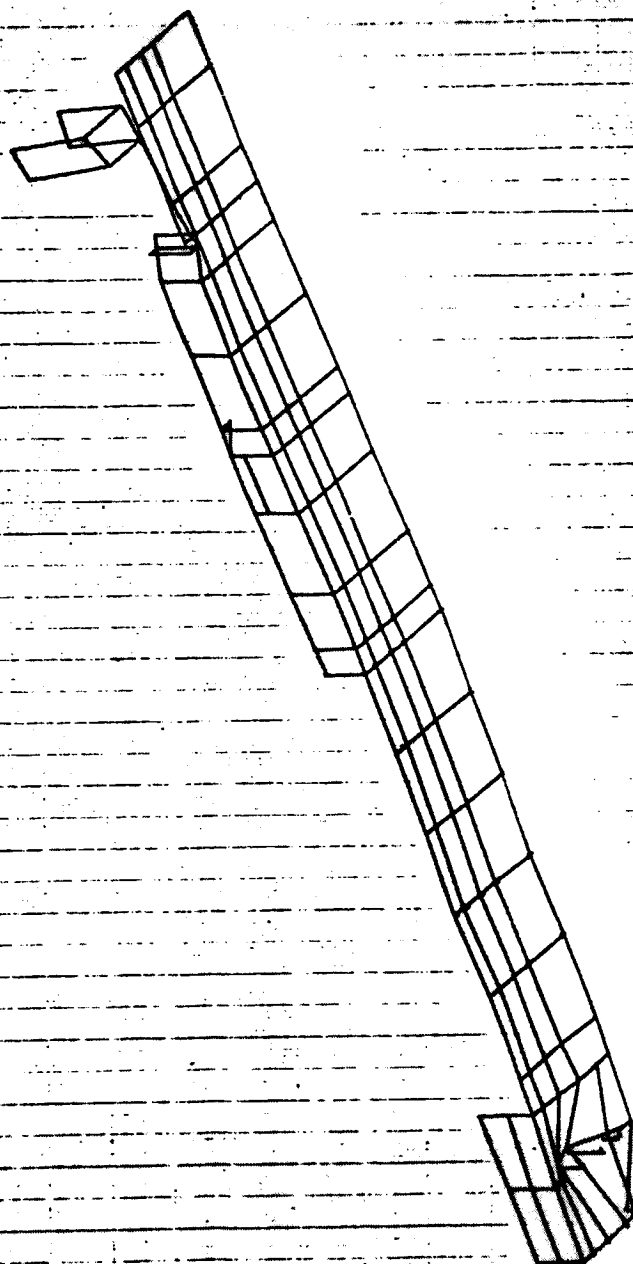
00 10/10/74 0001-007, - 2.1001000



PHASE 1 CONSIDER FUSELAGE-0001 CASE1 MODEL 2  
 BEING HALF EFF. LONG. 0.88 ( EFF. TRANS. AT WING 0.2/0.077.)  
 FREE MODES FIXED AT INTERFACE  
 MODAL DEFOR. SUBCASE 31 MODE 31 FREQ. 1018.917

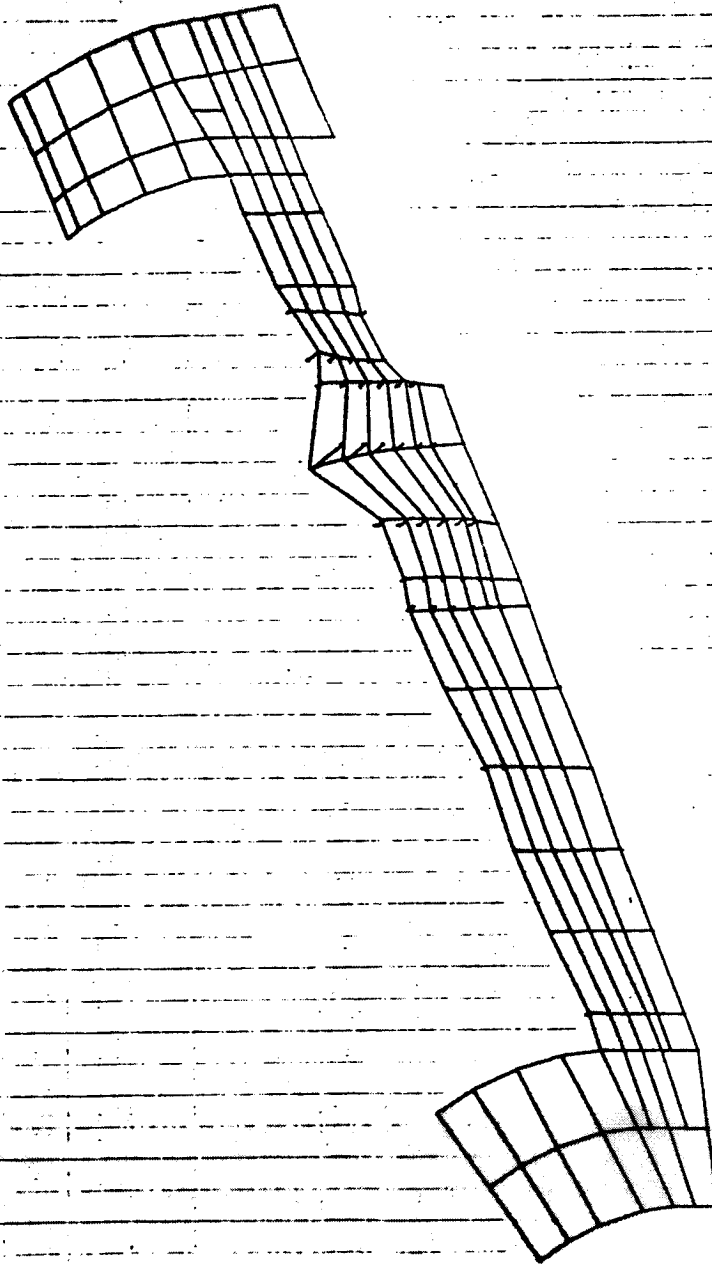


31 10/10/74 1000-007. = 2.1001000



PHASE 1. COORDINATE PURCHASE-STEEL CASES MODEL 2  
 BEING HALF OFF/ALONG. 801 077. TRUSS. AT WING 03-2/007.  
 FREE MOSES FILLED AT INTERFACE  
 MODAL SECTION. SURFACE 31. MOSE 31. FREE. 1010. 117

64 10/10/70 1010-007. = 1.00000000



PHASE 1. CORBITER FUSELAGE-970M CASE) MODEL 2  
 SKINS HALF ETV, LONG. 881 ETV, TRANS. AT WING (8-2/2 ETV.)  
 FREE MODES FIXED AT INTERFACE  
 MODAL ORDER, SUBCASE 32 MODE 32 FREQ. 1042.683

20 10/10/74 1000000.00 1.00000000

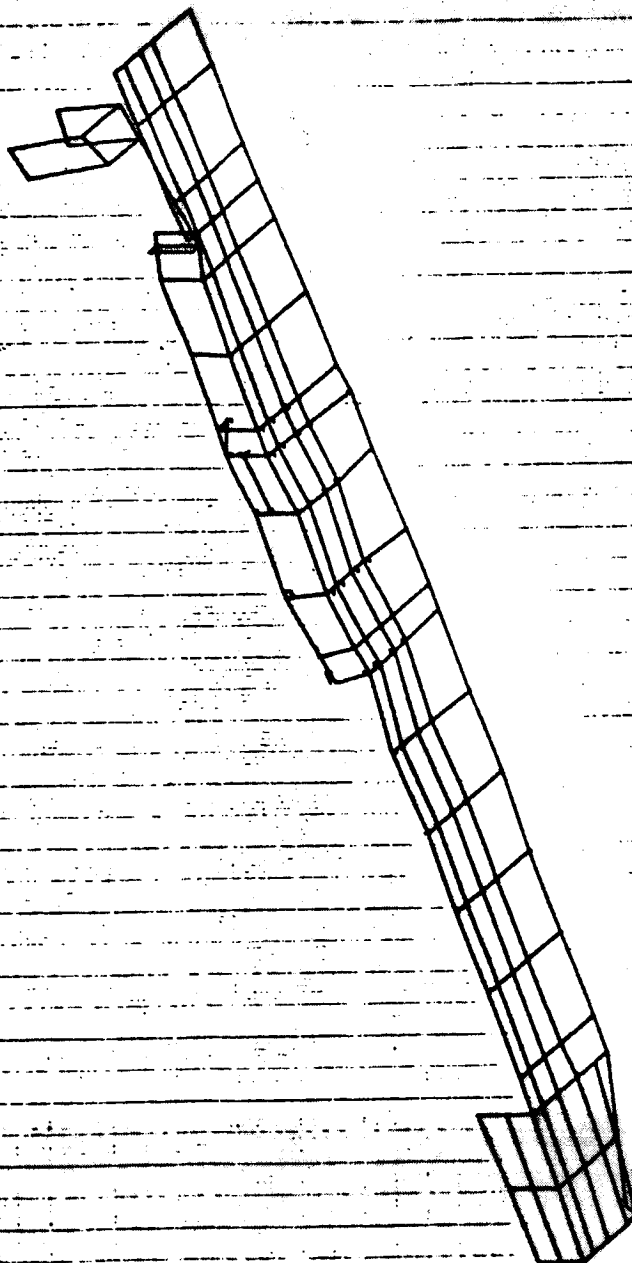
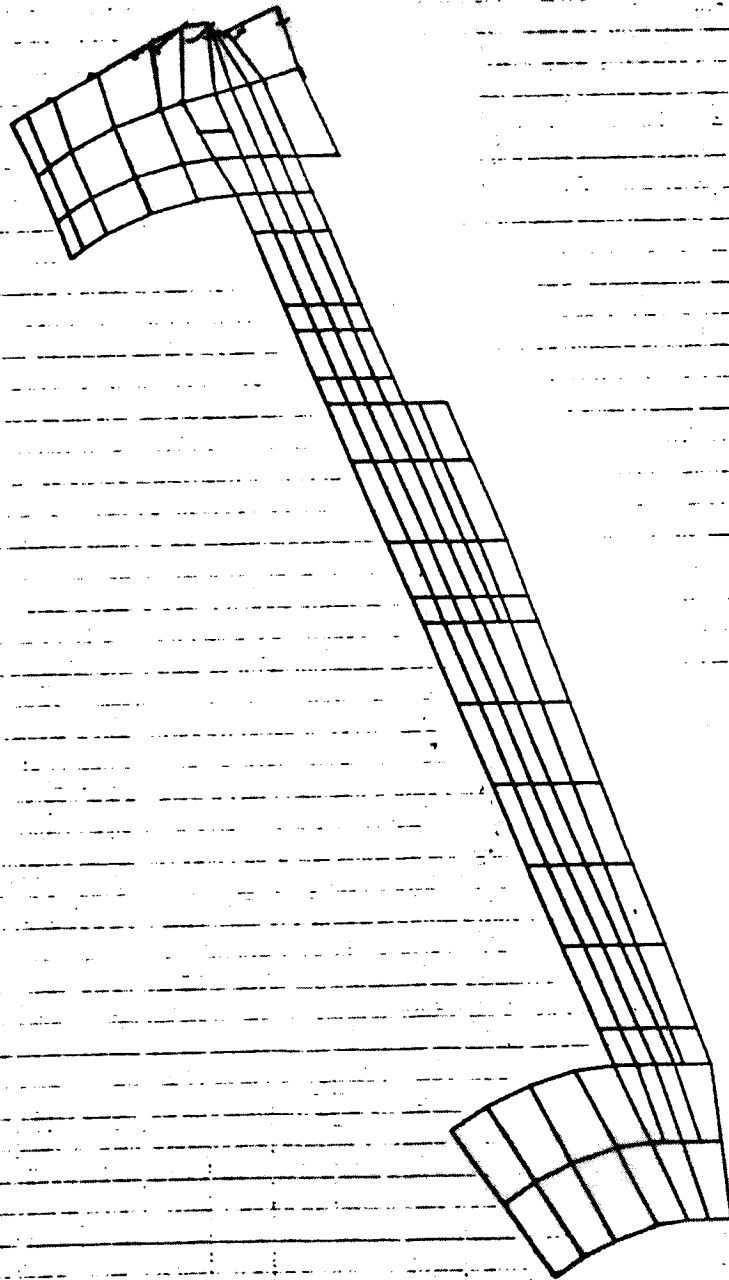


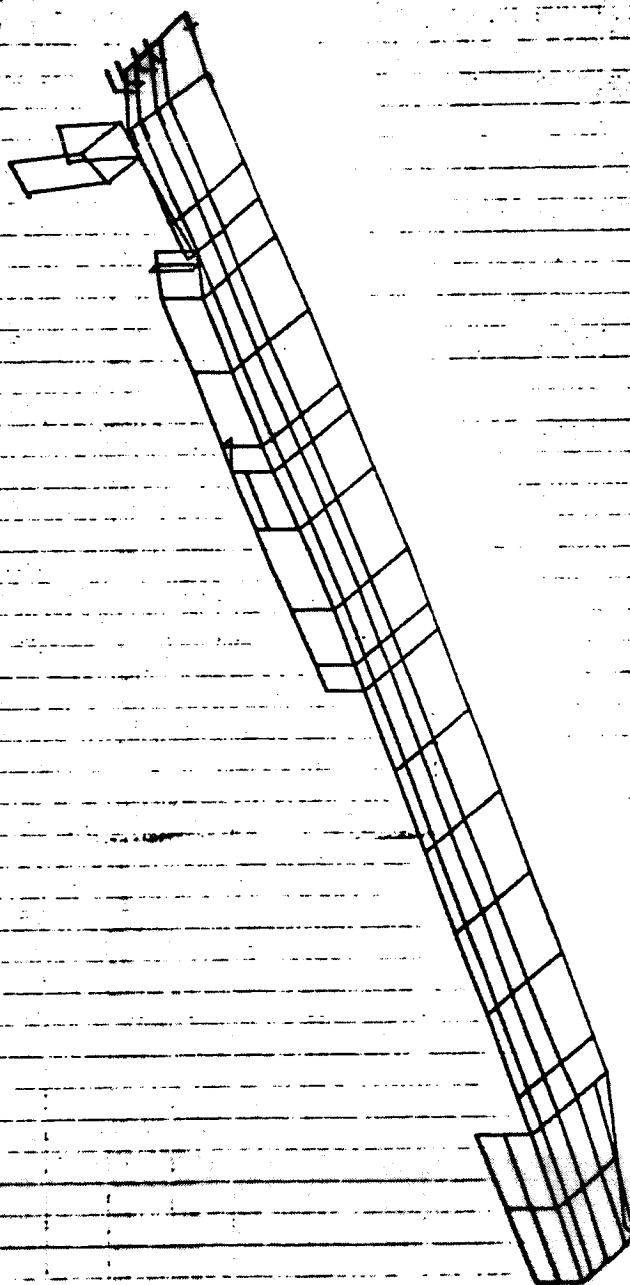
FIGURE 1. CUBIC FEET FUELAGE-0700 GROSS WEIGHT 2  
WEIGHT HALF OFF-LOADING-0800 GROSS WEIGHT 2  
FREE WEIGHTS FIXED AT INTERFAC  
LOCAL OFFICE. SURFACE 22 MODE 22 FREQ. 1042.000

10/10/74 0000-0007. = 1.00000000



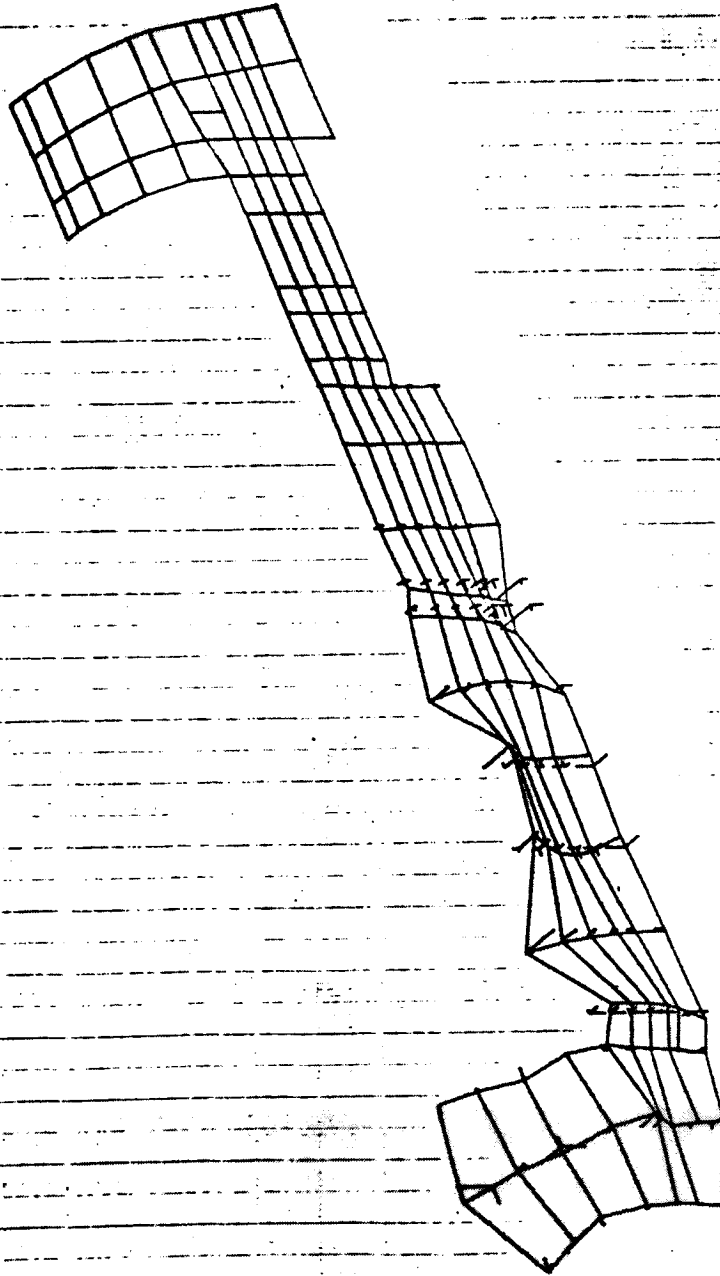
PHASE 1 COMBINED PURCHASE-PTM CASE) MODEL 2  
 PRICE HALF ETT.LONG.85 ( ETT. TRANS. AT MIN 0.8/0077.)  
 PRICE MODES FINED AT INTERFACE  
 MODAL DEFOR. SURFACE 33 MODE 33 FREQ. 1000.401

80 10/10/74 300-007, o 1, 00000000



PHASE 1. GEOMETRIC FUSELAGE-SYMM GASES MODEL 2  
SKIN HALF EFF. LOW. .861 EFF. TRANS. AT WING (0.8/0.877.1)  
FREE MOSES FILMS AT INTERFACE  
MODAL ORDER. SURFACE 33 MODE 33 FREQ. 1080.401

1 10/15/74 1000-007, = 1.000100740



PHASE 1. COBOLTER FUSelage-STYAM CASE) MODEL 2  
 SKIN HALF EPP, LONG. 88 ( ETT, TRANS. AT WING (8-2/3 ETT.)  
 PREC MOSES FIXED AT INTERFACE  
 MODAL DETOR. SUBCASE 34 MODE 34 FREQ. 1074.848

84 10/10/74 1000-007, a 1,000,000

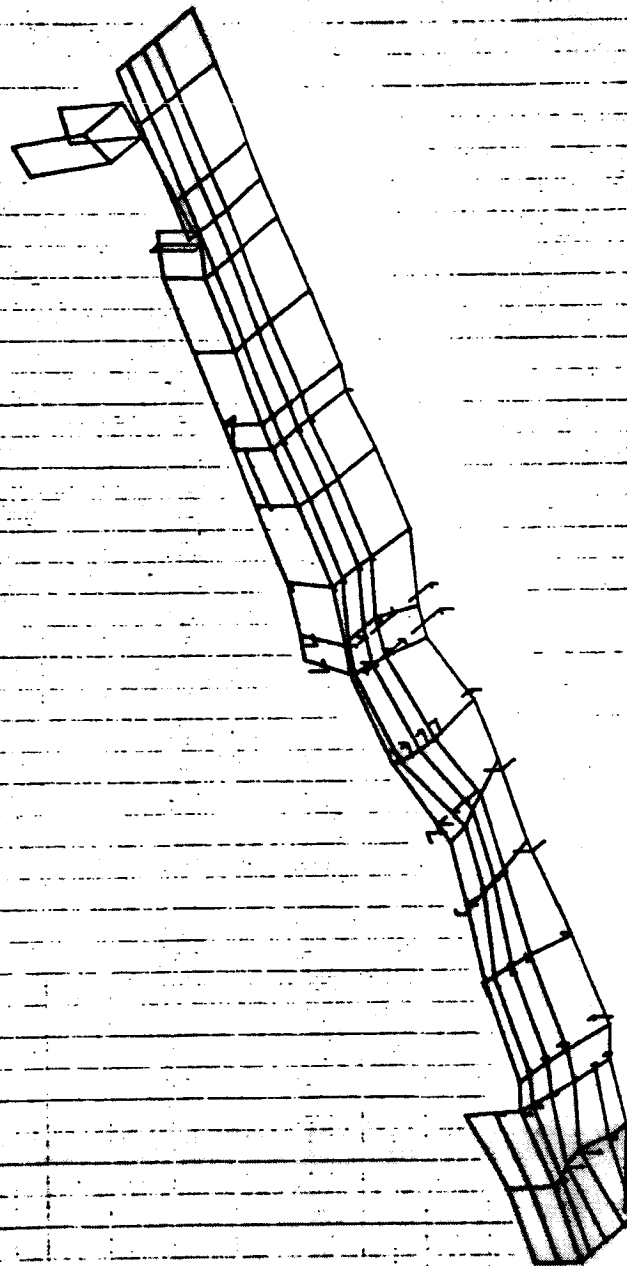
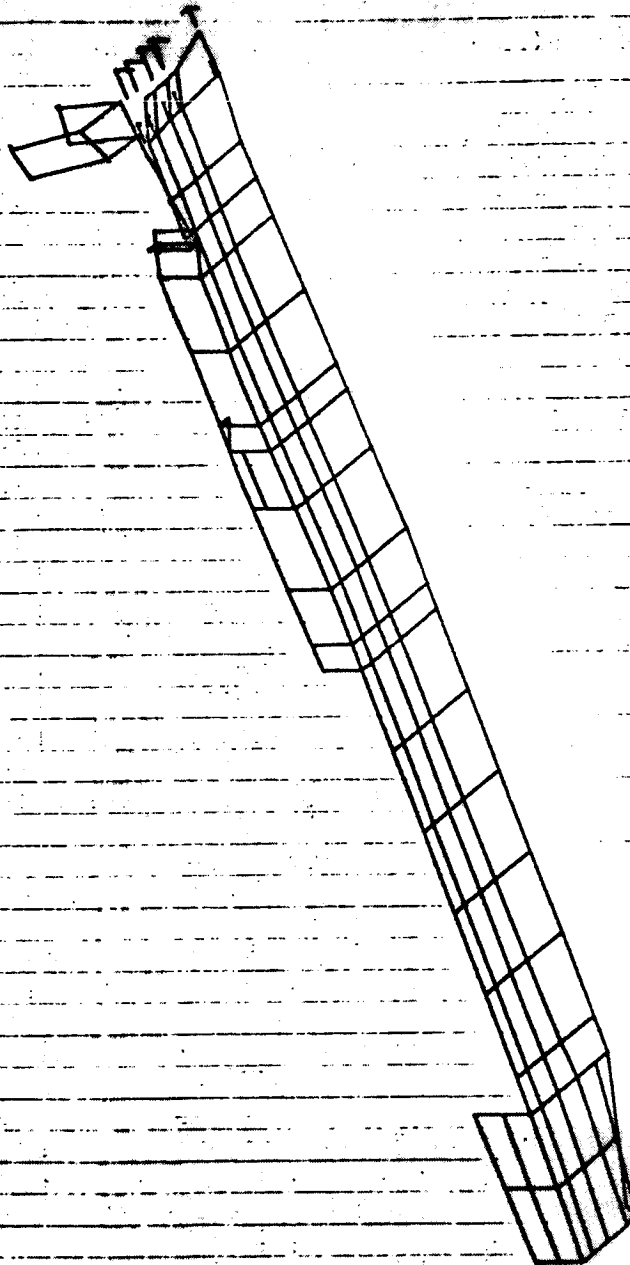


FIGURE 1. CURVED FINNED ARC FROM MODEL 2  
 BEING HALF CRYSTALLINE. 80% CRY. TRANS. AT WIND 0.2/0.077.1  
 FREE MODES PLUM AT INTERFAC  
 MODAL SECT. 84 MODE 24 FREQ. 1074.848

PHASE 1 CONVERTER PURCHASE-SYMA CASE) MODEL 3  
SKING HALF EFF. LONG. 88 ( EFF. TRANS. AT WING (0-2/3EFF.)  
FREE MODES FIXED AT INTERFACE  
MODAL DETOR, SUBCASE 38 MODE 38 FREQ. 1018.005



30 10/15/74 0001-007. = 1.00000000



PLANE 1 ORBITER FUELAGE-PTM CASE) MODEL 2  
 BULKY HALF STY-LENG./SS ( EFF. TRANS. AT WING 0-5/SECT.)  
 FREE MODES FINES AT INTERFACE  
 MODAL COEFF. SURFACE 30 MODE 30 FREQ. 1088.008

10/12/74 100-007. 0 1.0000000

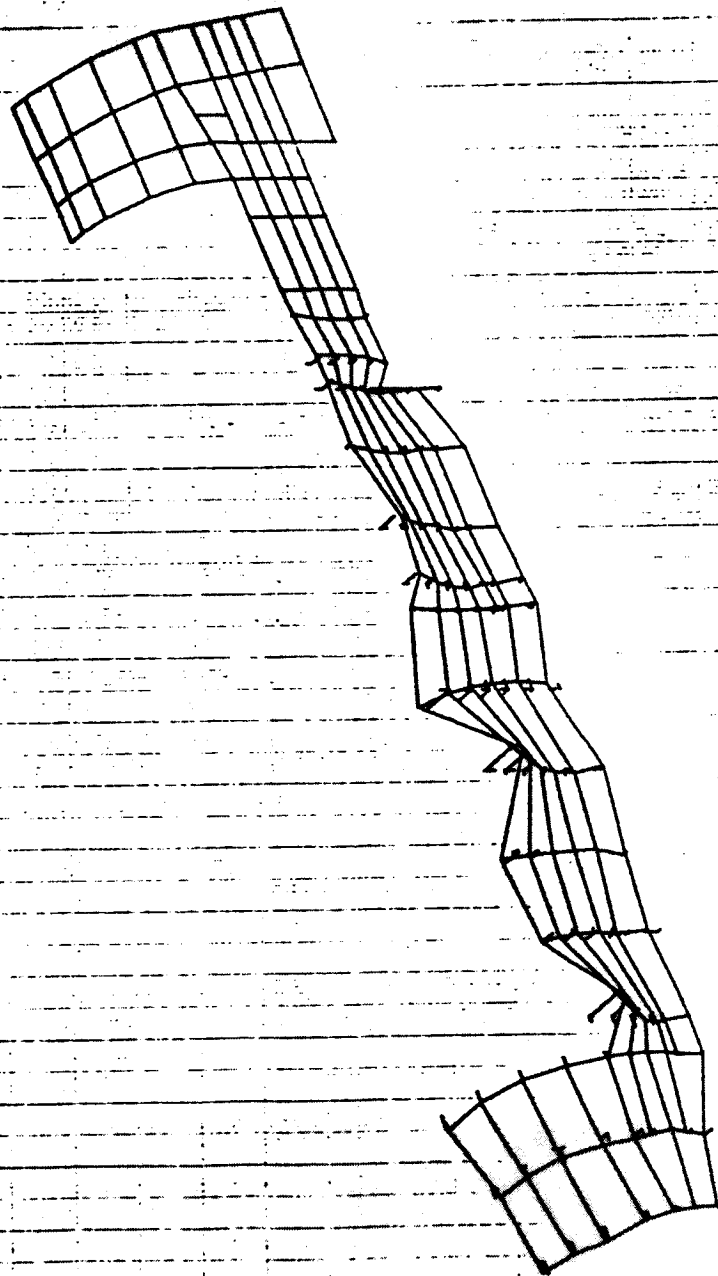
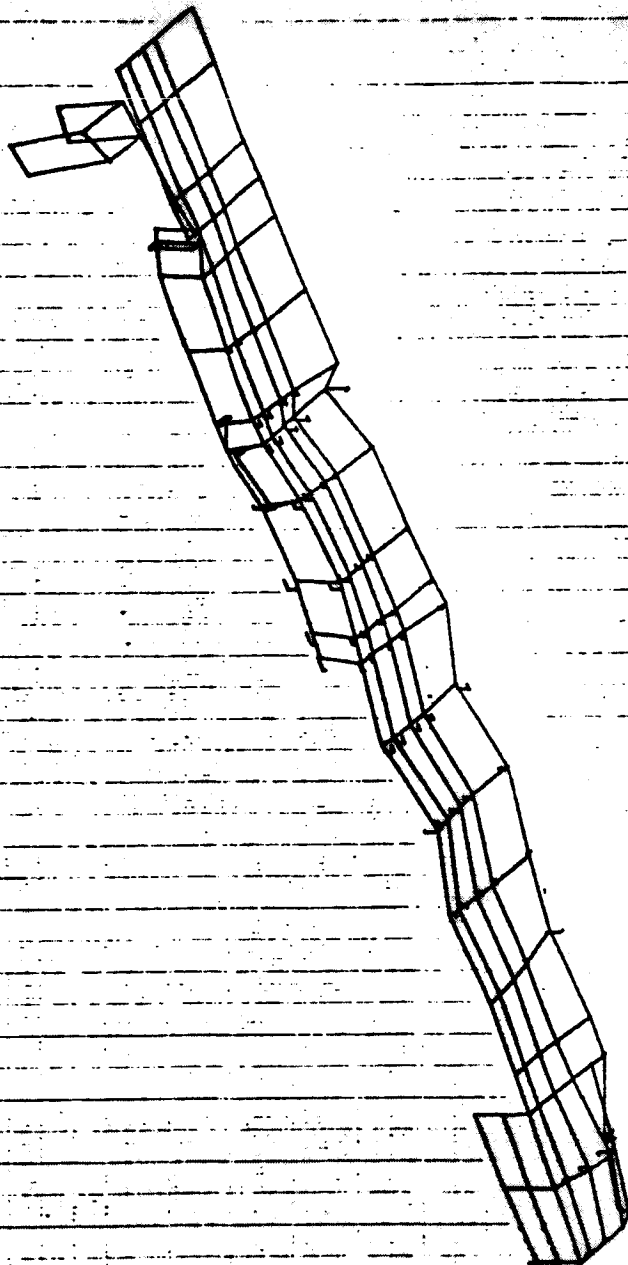


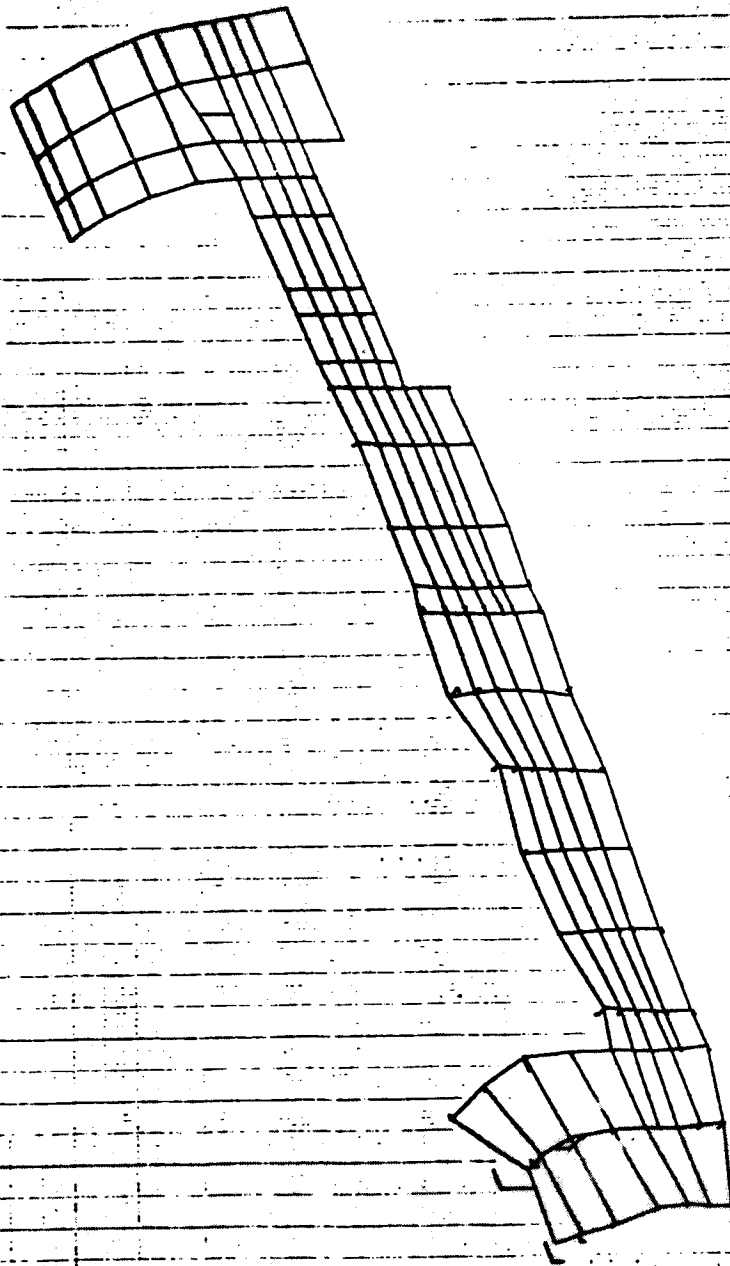
FIGURE 1. COBBLESTONE FURGLARE-STYMA CASE) MODEL 2  
 BEING HALF EFF. LONG. 88 ( EFF. TRANS. AT WING (8.5/20FF.))  
 FREE MODES FIXED AT INTERFACE  
 MODAL DEFOR. SURFACE 36 MODE 36 FREQ. 1137.187

30 10/10/74 1100-007. - 1.00000000



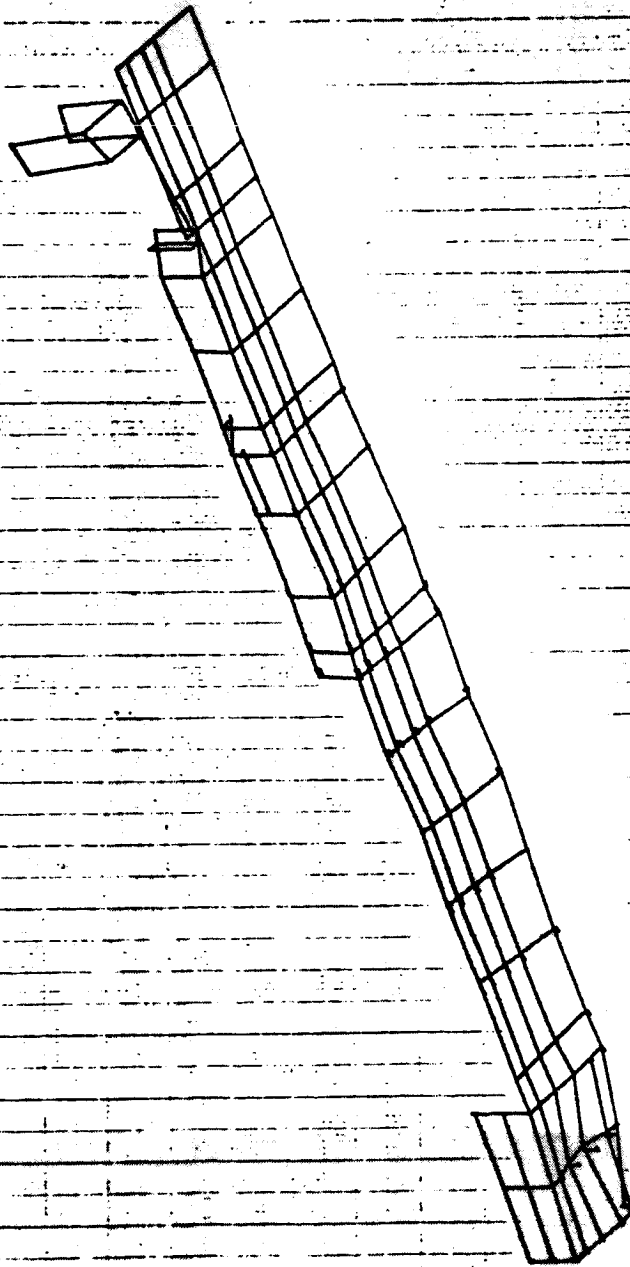
PHASE 1. COORDINATE SURFACE FROM DATA MODEL 2  
 BEING HALF EFF. LONG. 0.81 EFF. TRANS. AT MID 0.8/0.877.  
 FACE MODES FINES AT INTERFACE  
 MODAL DEFORM. SURFACE 30 MODAL 30 PRED. 1137.187

4 10/15/74 1000-007. - 2.00710100



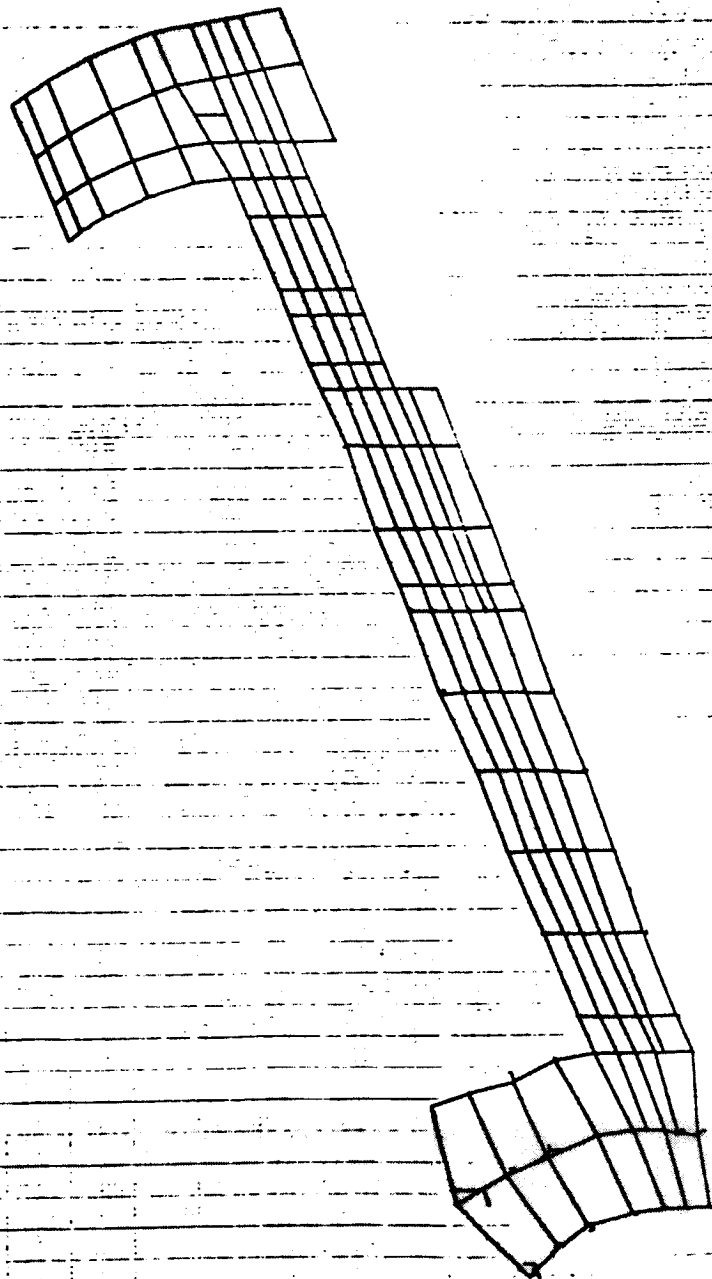
PHASE 1. JOINTER FUSELAGE-SYMA CASE) MODEL 2  
 BEING HALF CTF. LONG. 0.06 CTF. TRANS. AT WING (0.02/0.077.)  
 FREE MODES FIXED AT INTERFACE  
 MODAL DEFORM. SUBCASE 27 MODE 27 FREQ. 1140.840

51 1071574 100-227, 0 2.0110100



PHASE 1 CORBITER BUNELAGE-8744 CASE) MODEL 2  
 BEING HALF EFF. LONG. 88 ( EFF. TRANS. AT WING 99-2/2077.)  
 FREE MODES FILLED AT INTERFADE  
 MODAL ORDER, SUBCASE 31 MODE 31 FREQ. 1140.840

10/10/70 1000-007, 5 D. 10100000



PHASE 1. CONSIDER FUSELAGE-DYAN CASE) MODEL 2  
 SKINS HALF EFF. LONG. 188 ( EFF. TRANS. AT NINE (0-2/0EFF.)  
 FREE MODES FIXED AT INTERFACE  
 MODAL ORDER. SUBCASE 38 MODE 38 FREQ. 1184.862

NO 10/10/74 1000-007, d 0.1010000

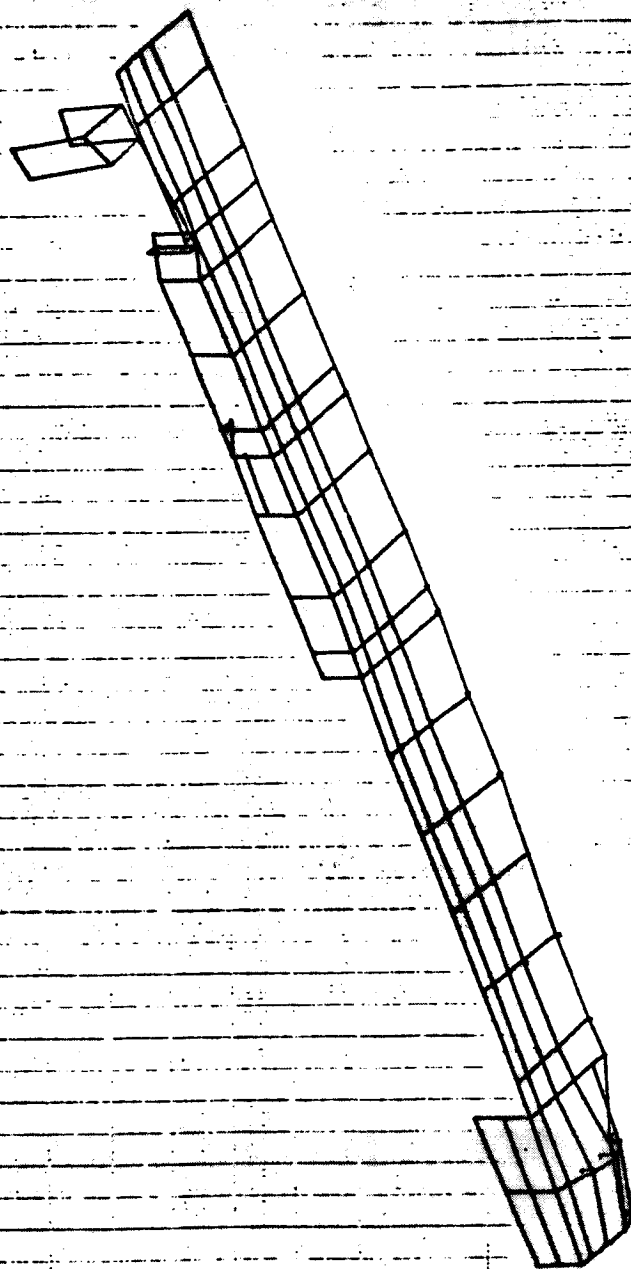
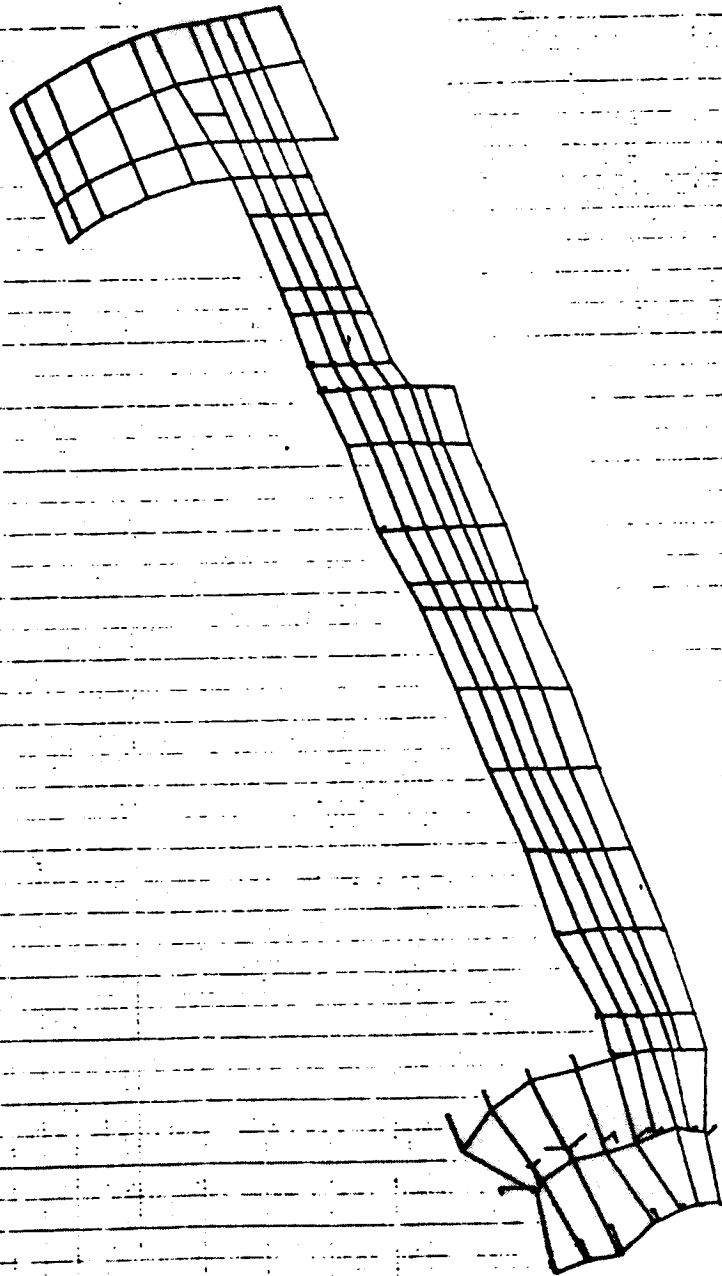


FIGURE 1. ORBITED FIBERGLASS-STEEL CASE, MODE 2  
BEING HALF OFF-LOAD, 1000 GPP, TRANS AT 1000-007/007.1  
FREE MODES FIXED AT INTERFACE  
MODAL ORDER, SURFACE 38 MODE 38 FREQ. 1164.002

10/10/70 0000-0007. • 11 00170100



PHASE 1 COBITER FUSELAGE-STYMI CASE1 MODEL 2  
 BKING HALP CFF.LONG.88 ( CFF.TRANS.AT WING (8-2/8CFF.)  
 FREE MODES FINED AT INTERFACE  
 MODAL DETOR. SUBCASE 34 MODE 34 FREQ. 1180.379



34 10/10/74 1000-007, 0 1.00170120

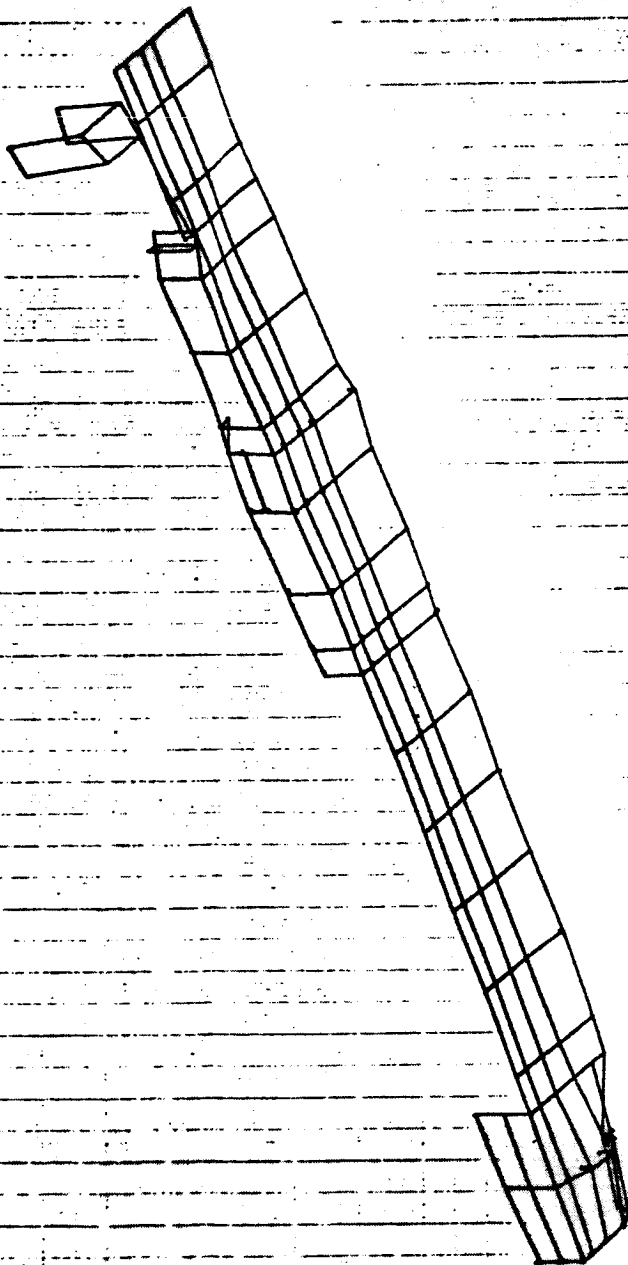
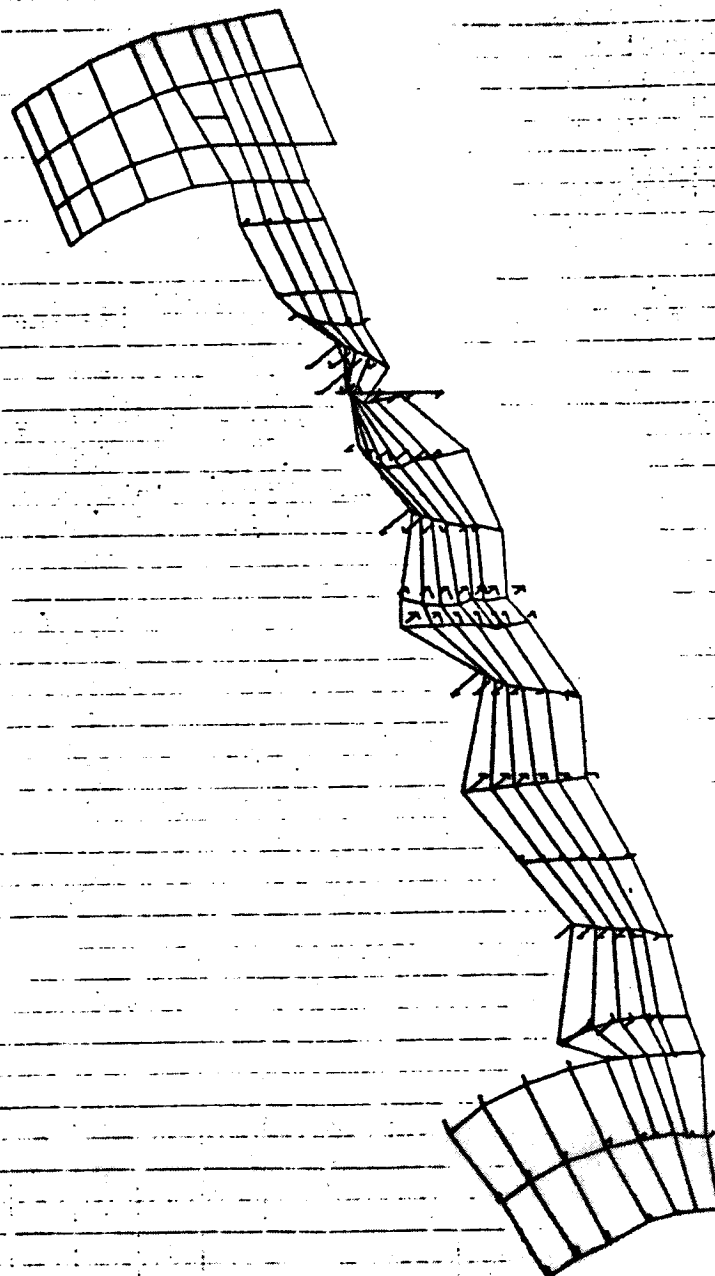
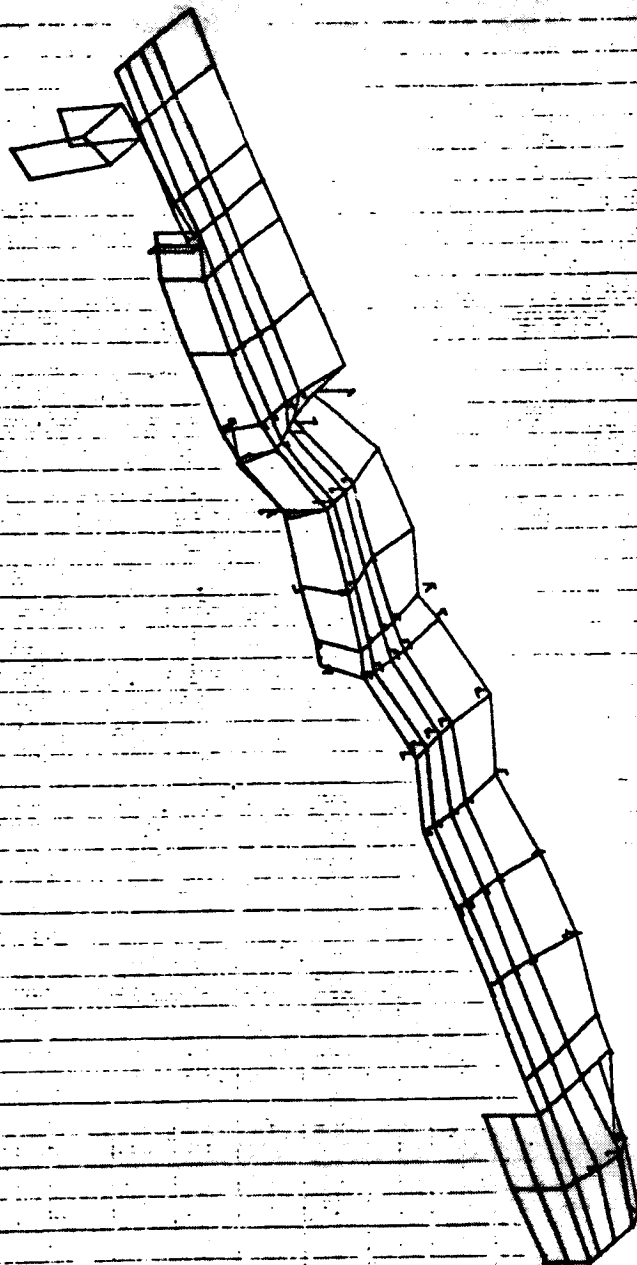


FIGURE 1. GEOMETRIC FUSelage-SYMA CASE) MODEL 2  
 SKIN HALF ETT, LONG, .95 ( ETT, TRANS. AT WING (0.5/0.577, )  
 FREE MODES FIXED AT INTERFACE  
 MODAL DEFON. SUBCASE 34 MODE 34 FREQ. 1160.374



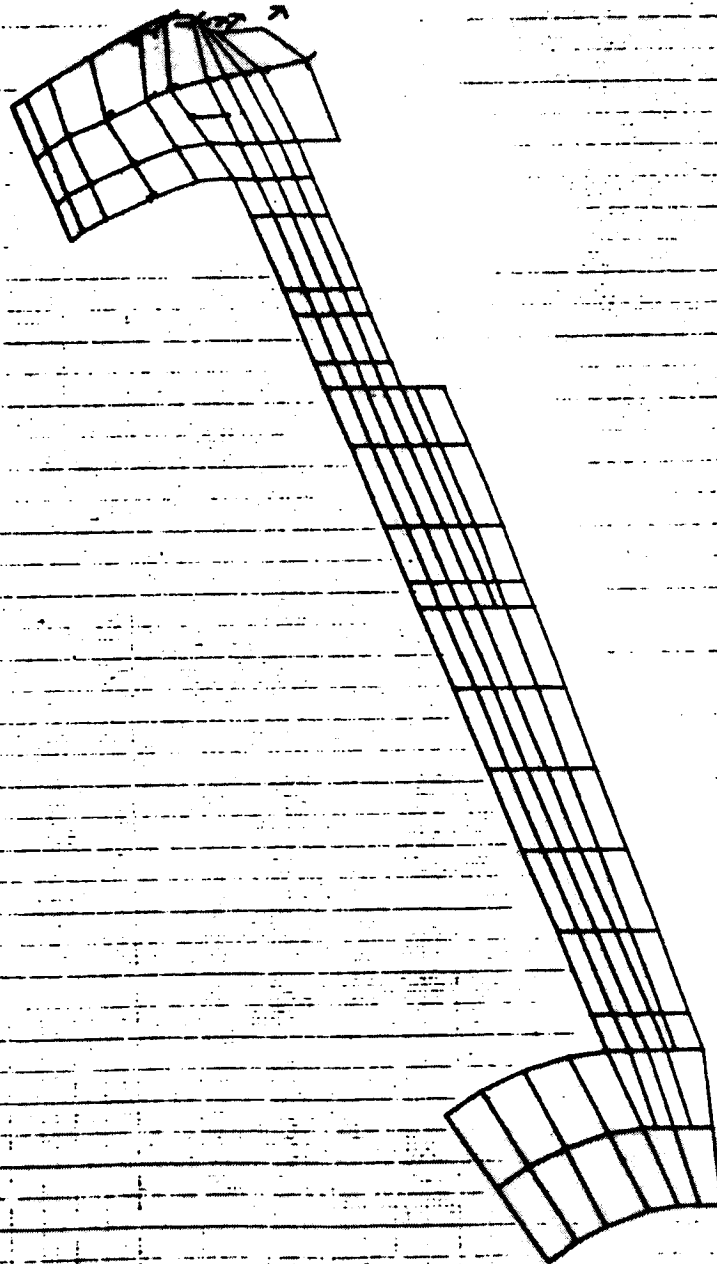
PHASE 1: CONVERTER SUBCABASE-BYAM CASE) MODEL 2  
 SKINS HALF CFF. LONG. 06( 577. TRANS. AT WING (0-2/3CFF.)  
 FREE MOODS FIXED AT INTERFACE  
 MODAL DEFOR. SUBCABASE 40 MODE 40 FREQ. 1179.880

49 10/10/74 0000-0000 - 1.00000000

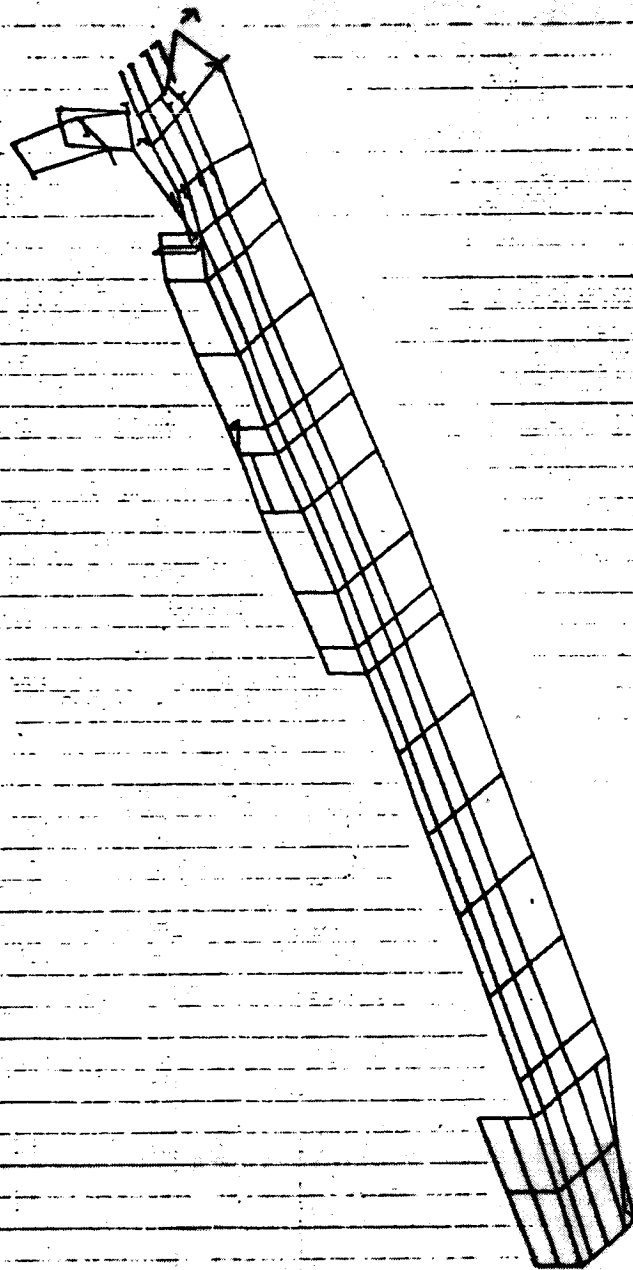


PHASE 1, GEOMETRY, FUELAGE, STAGE CASE, MODEL 2  
 SKIN, HALF EFF. LONG, .98 ( EFF. TRANS. AT WING 0.5/2007. )  
 FREE MEMES FIXED AT INTERFACE  
 MODAL ORDER, SURFACE 40 MODE 40 FREQ. 1174.880

0 00-0000 000-000, 0 1,0000000

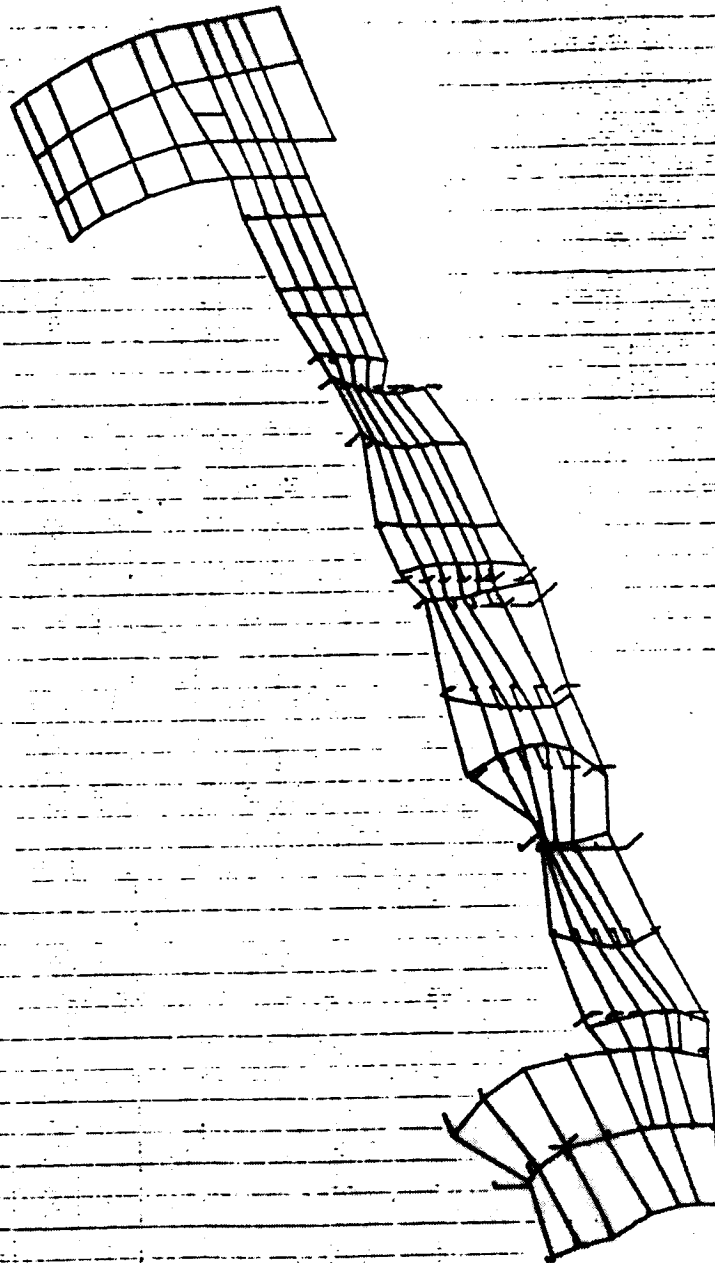


PHASE 1. CUBIC INTER POLARIZATION (FROM CASE) MODEL 2  
 BEING HALF CTF. LONG. 0.81 CTF. TRANS. AT 1119.0-2/0077.  
 FREE MODES FIXED AT INTERFACE  
 MODAL BEYON. SURFACE 41 MODE 41 FREQ. 1197.362



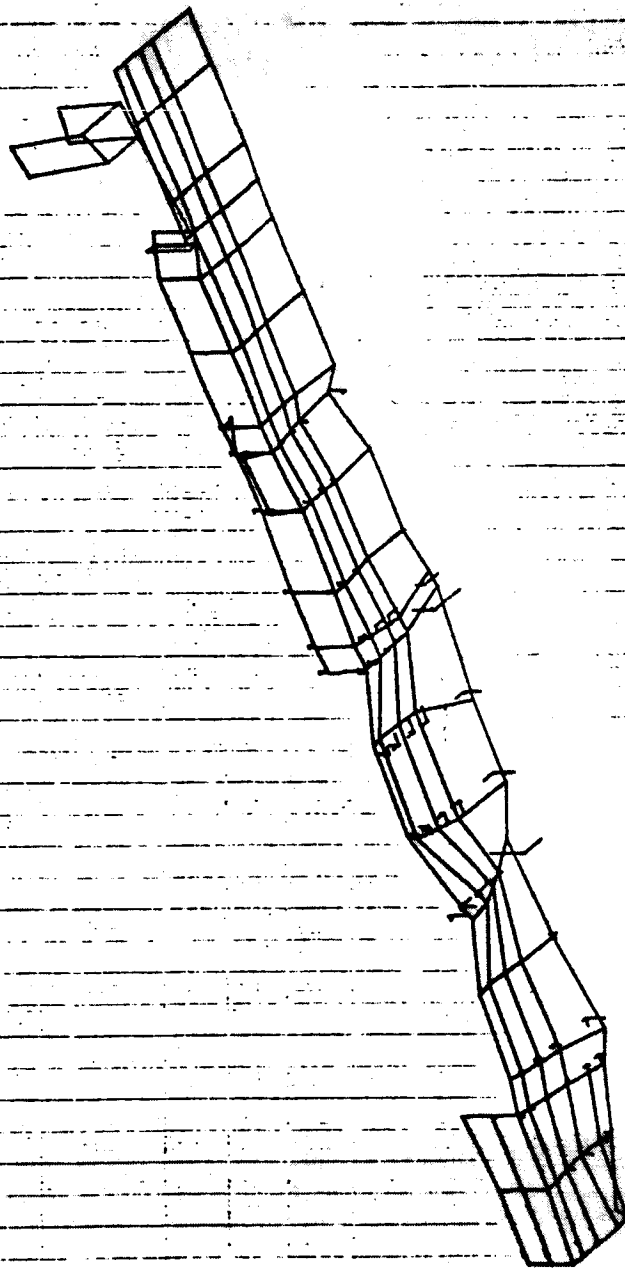
PHASE 1 CONSIDER FUSELAGE-SYM CASE) MODEL 2  
 SKIN HALF EFF, LONG, .88 EFF, TRANS. AT WING (0.2/3077.)  
 FREE MODES FIXED AT INTERFACE  
 MODAL DEFOR. SUBCASE 41 MODE 41 FREQ. 1187.302

10/10/76 1000-007. - 1.0000000

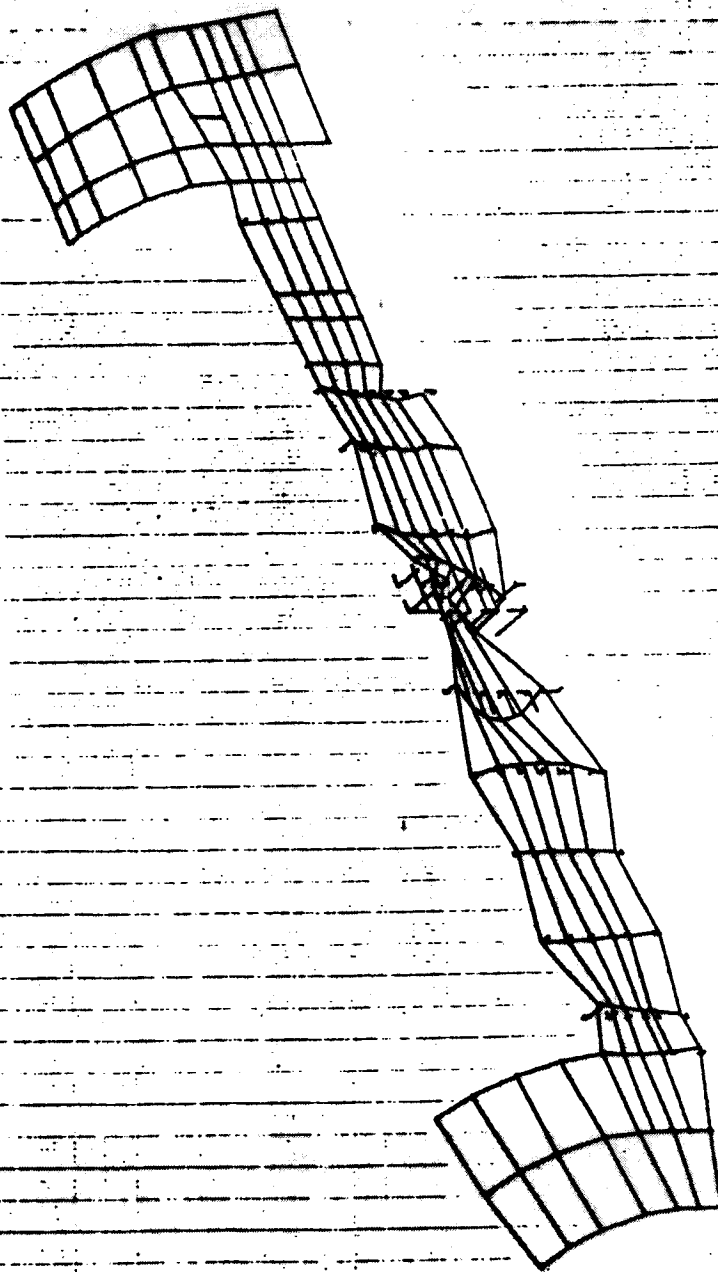


PHASE 1. COORDINATE FUNDAMENTAL CASE) MODEL 8  
 BEING HALF ETT. LONG. 861 ETT. TRANS. AT WING (8-2/3277.)  
 FREE MOVES PILES AT INTERFACE  
 MODAL ORDER, BURSCASE 42 MODE 42 FREQ. 1308.867

42 1079074 200-007. = 1.000-0010

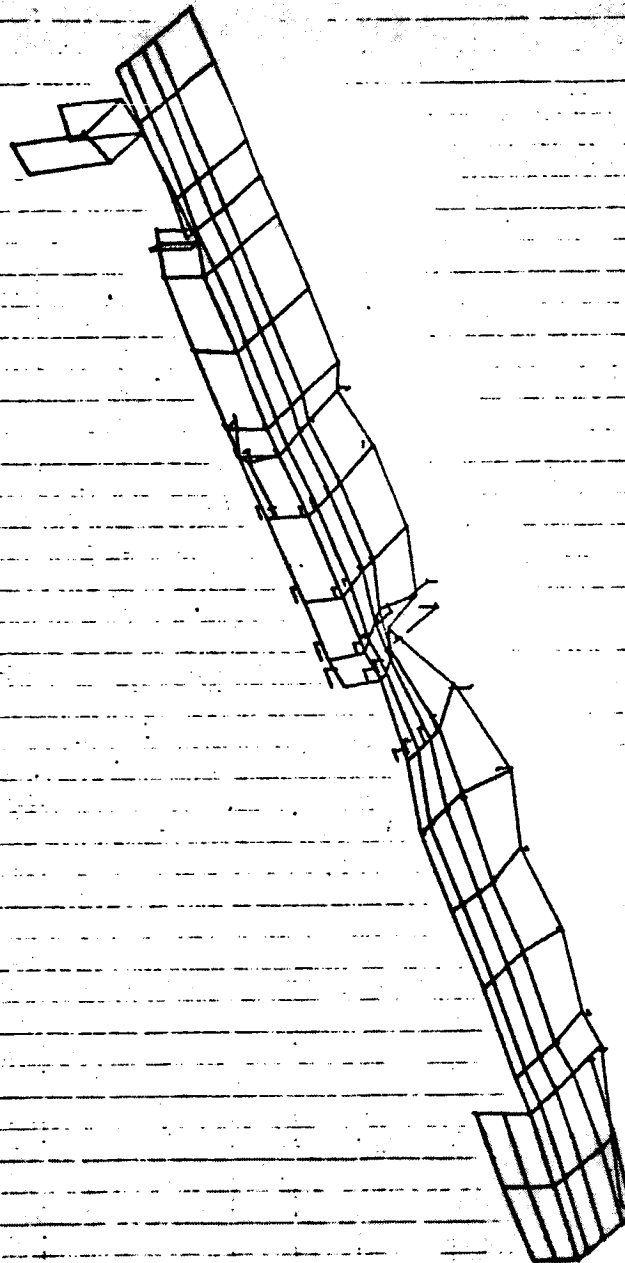


PHASE 1 COBSTER FUELAGE-7704 CASES MODEL 2  
 SKINS HALF OFF, LONG, 80% OFF, TRANS. AT NING 00-2/3077.1  
 FREE WINGS FINEST AT INTERFACE  
 ACIAL SETTER, SUB-CASE 42 MODE 42 FREQ. 1300.807



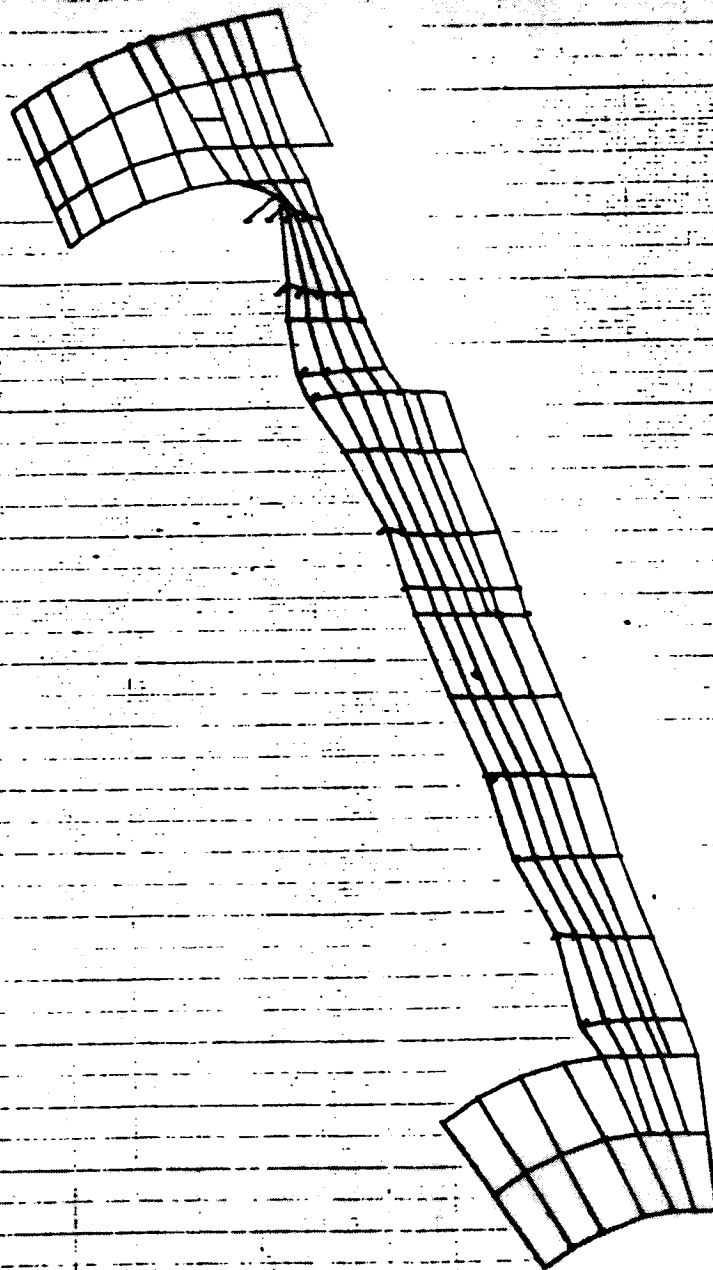
PHASE 1, SUBCARE 43, SUBCARE 43, MODE 43  
 GELING HALF OFF-LOAD, 80% EFF. TRANS. AT WING 0-2/2077.  
 FREE MODES FIXED AT INTERFAC  
 MODAL SECTOR, SUBCARE 43 MODE 43 FREQ. 1284.131



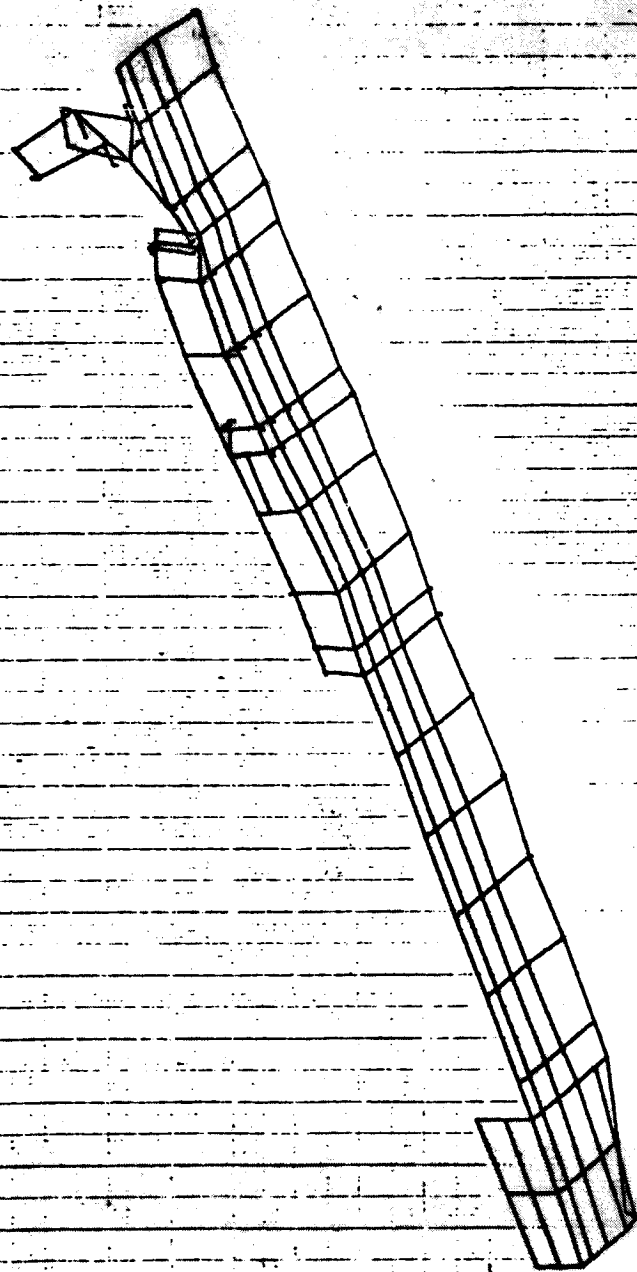


PHASE 1. GENSITE SUBSAGE-0704 CASE) MODEL 2  
 SKING ONLY ETT, LIND, 08 ( ETT, TRANS. AT WIND 00-0-0/0077. )  
 FREE MOSES FINES AT INTERFACE  
 MODAL SEVEN, SUBSAGE 43 MODE 43 FREQ. 1854.131

11 10/15/70 100-207, 0 1, 10000000

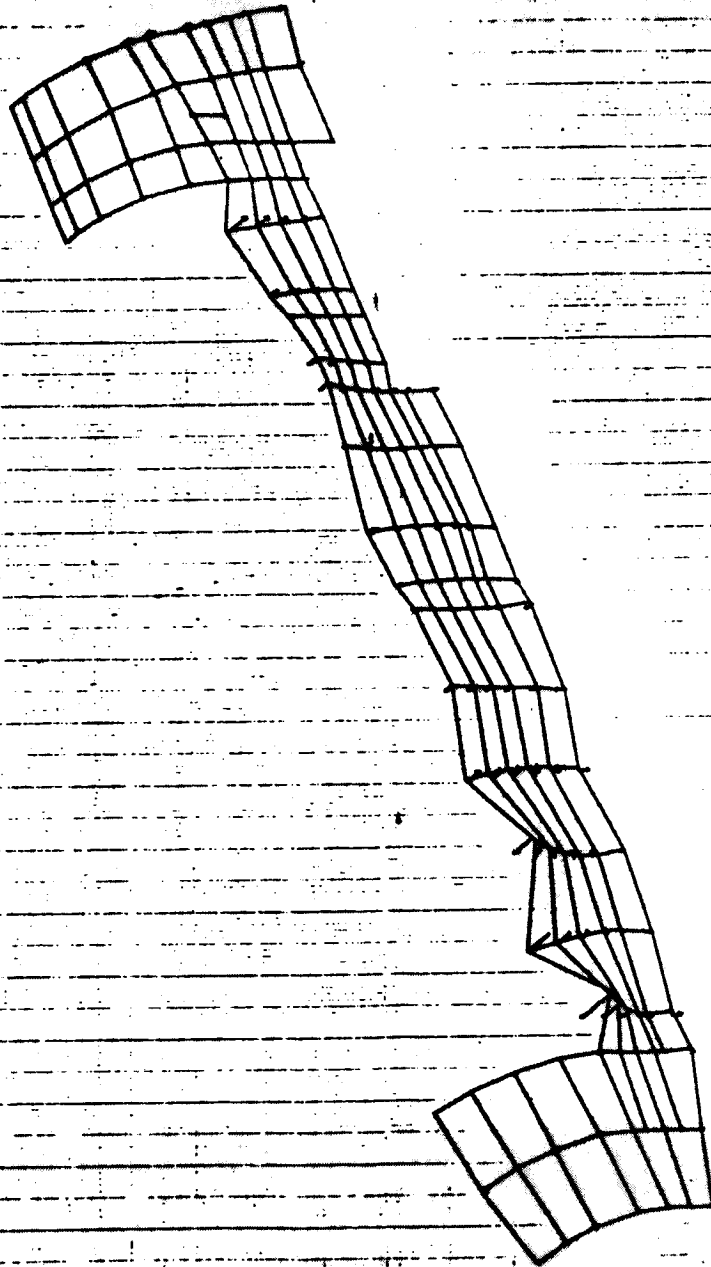


PHASE 1, ORBITAL SURFACE-ORBITAL GAMES MODEL 8  
 BEING MAP OFF LENS, OR OFF, TRANS. AT WING 0-2/0077, 3  
 FREE MODES FINES AT INTERFACE  
 MODAL BODY, SURFACE 44 MODE 44 FREE, 1271.000



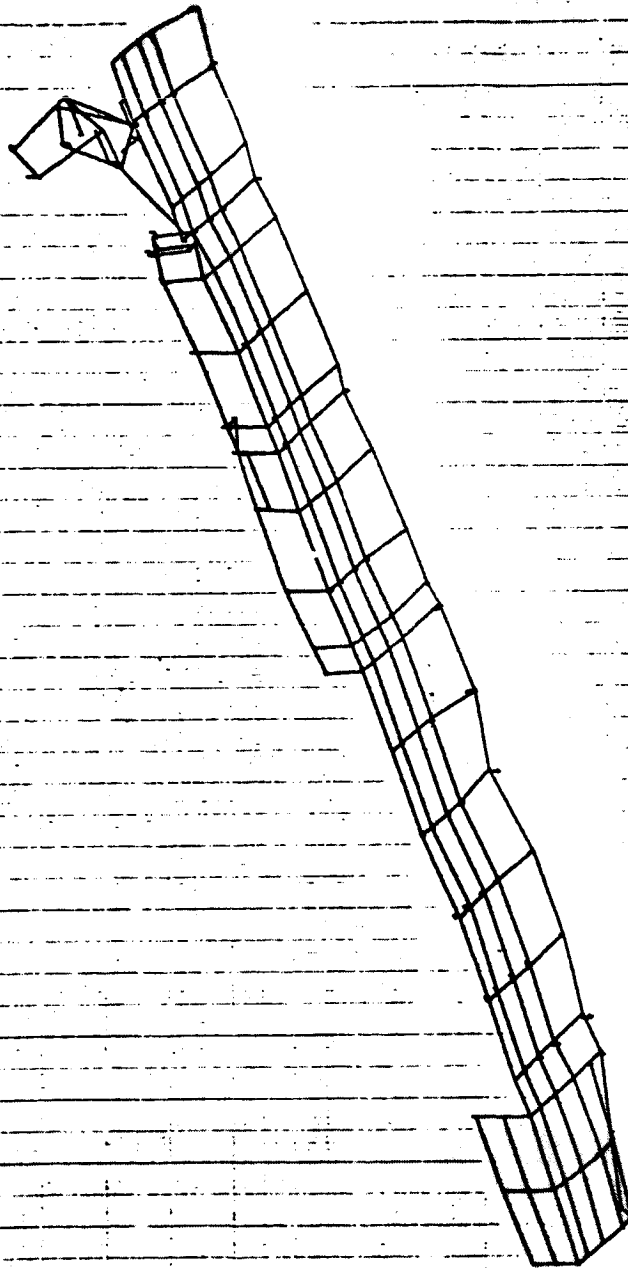
PHASE 1. CROSSLINK PANELS - 2700 GAGE MODEL 2  
 BEING HALF OFF LINE. 001 077. TRANS. AT WINGED-2/0077.1  
 FREE WING. FUSED AT INTERFACE  
 MEDAL BEYON. SURFACE 44 MODE 44 PROG. 1271.000

10 10/10/70 1000-007, 0 1.000000



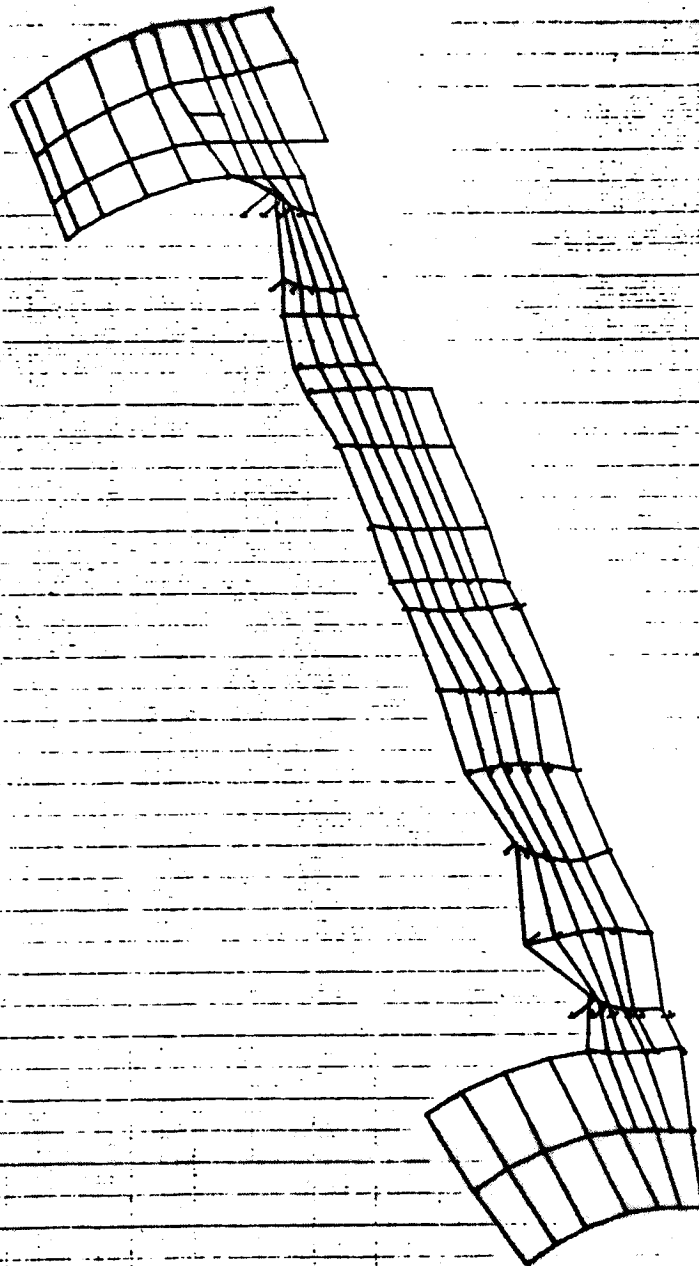
PHASE 1. RESIDUAL FUSelage-STYL CASE) MODEL 2  
 SKINS HALF OFF-LONG. .00 ( EFF. TRANS. AT WING 00-0-00077.)  
 FREE MODES FIXED AT INTERFACE  
 MODAL DEFOR. SUBCASE 48 MODE 48 FREQ. 1280.917

48 12/12/74 1000-007. = 1.00000000



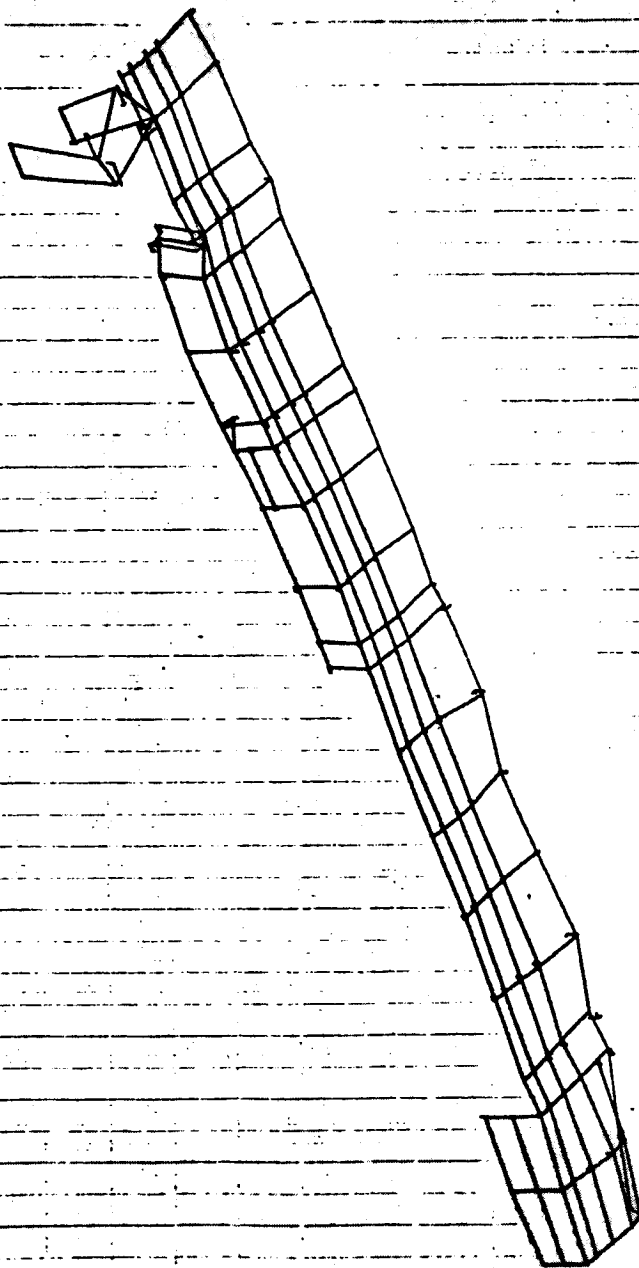
PHASE 1. GEOMETRIC SURFACE-SPIN CASE) MODEL 2  
BEING HALF EFF. LONG. 851 EFF. TRANS. AT MINS 8-2/8077.1  
FREE MOVES FINED AT INTERFACE  
MODAL MOTOR. SURFACE 45 MODE 45 FREQ. 1802.977

10 10/12/70 1000-007, 0 1.00000000



PHASE 1. CONSIDER FURGLAGE-SYM CASE) MODEL 8  
 BEING HALF EFF. LONG, 88 ( EFF. TRUSS. AT WING (8-3/8 EFF. )  
 FREE MODES FIXED AT INTERFACE  
 MODAL DEFOR. SURFACE 48 MODE 48 FREQ. 1267.813

12/10/74 1000-007. = 1.00000000



PHASE 1 CONTINUED FROM CASE 1 MODEL 2  
 BEING HALF OFF-LOAD. 001 CTT. TRANS. AT WING 00-15/0077.)  
 FREE MODES FINER AT INTERFACE  
 MODAL DEFOR. SUBCASE 48 - MODE 48 FREQ. 1287.843

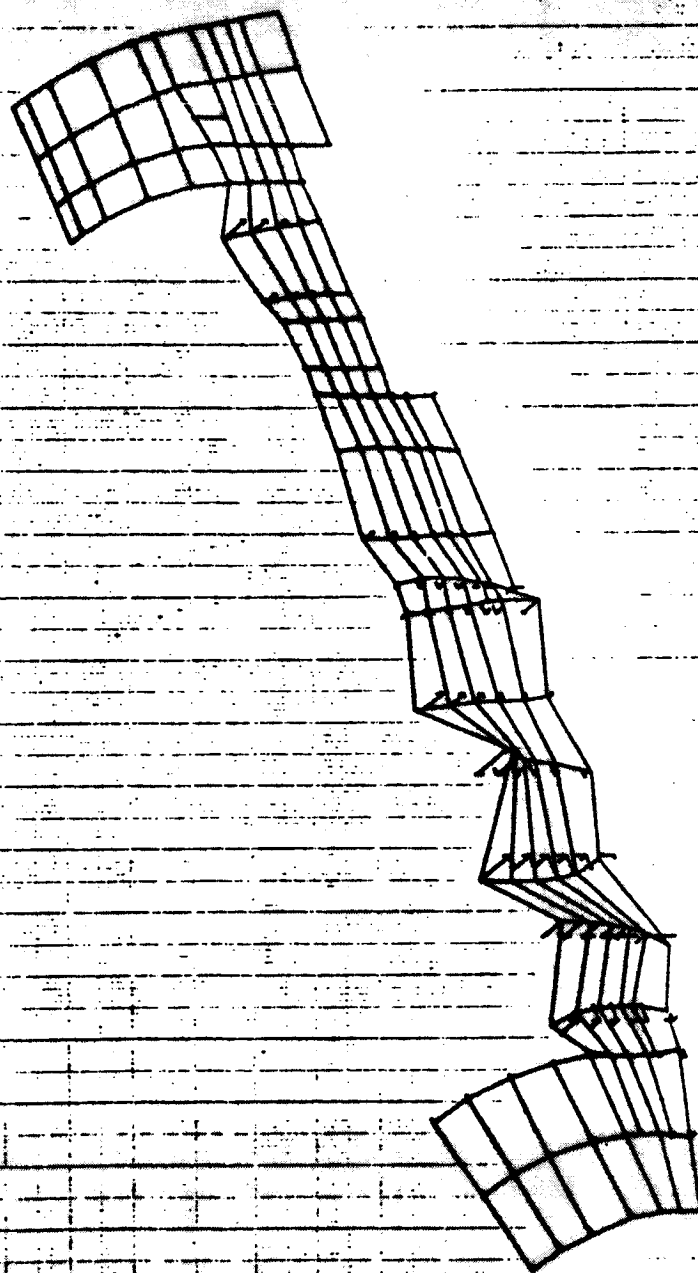
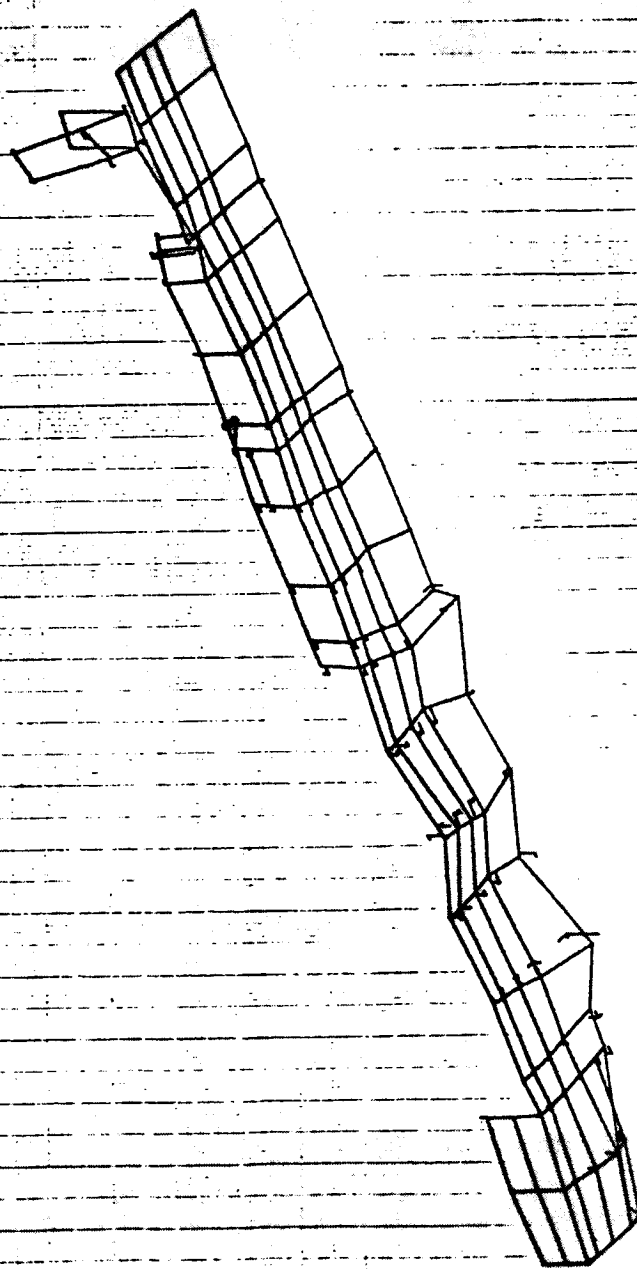


FIGURE 1. CURVED WING-SEGMENT CASES MODEL 2  
 BEING ONLY 10% OF THE TOTAL CASES. TRANS. AT 10% OF 10% OF 10%  
 FREE WING CASES AT 10% OF 10% OF 10%  
 MODEL 2. CURVED WING AT 10% OF 10% OF 10%

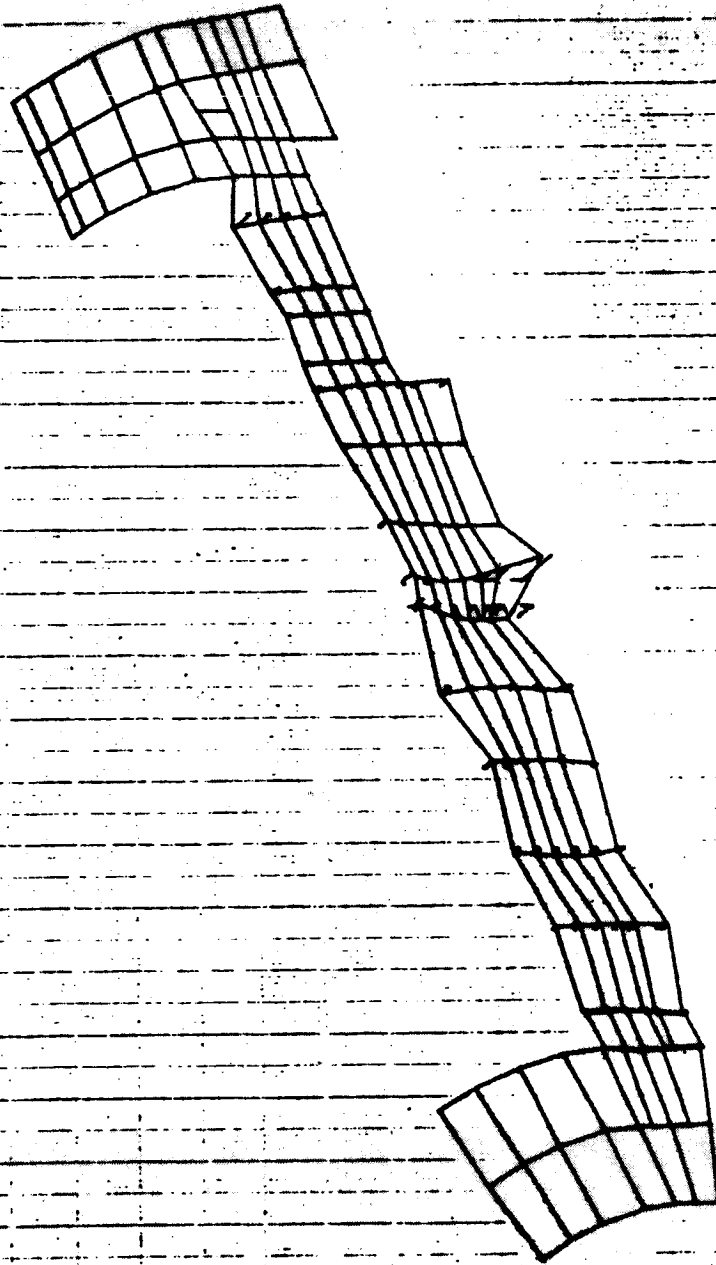


10/10/74 0001-007. = 1.00000000



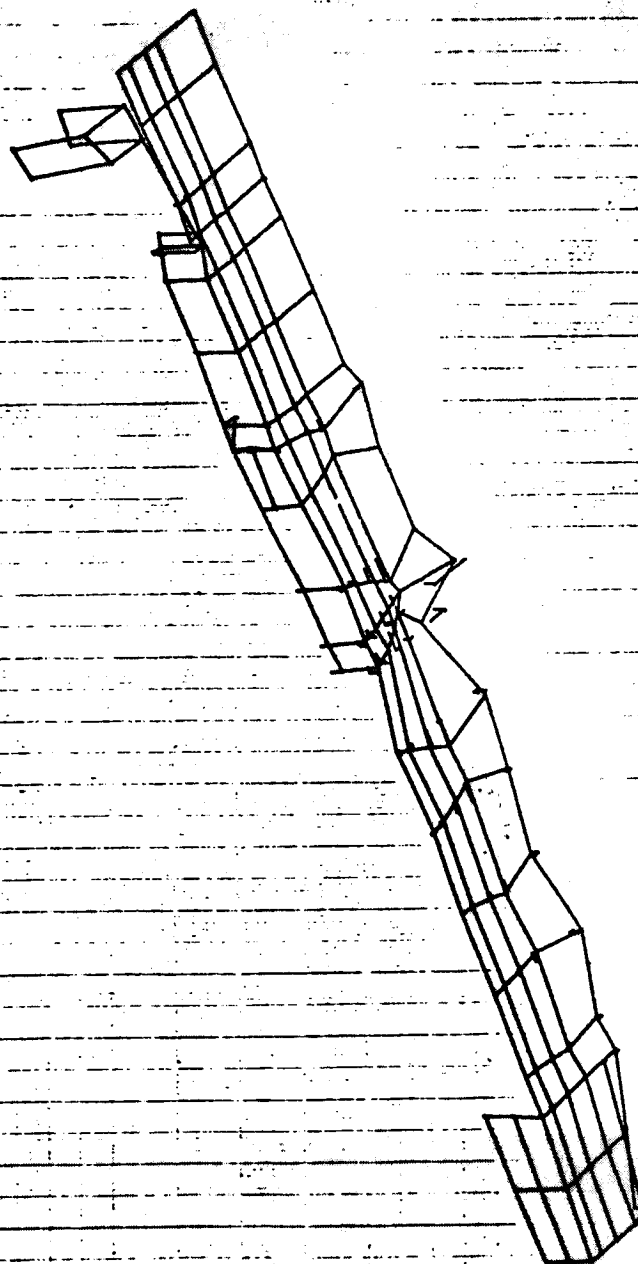
PHASE 1 CONSIDER FUSELAGE-6700 CASE) MODEL 2  
SKINS HALF ETT.LONG.188 ( ETT. TRANS. AT WING 08-2/2077. )  
FREE MODES FIXED AT INTERFACE  
LOCAL DEFORM. SURFACE 48 MODE 47 FREQ. 1242.116

10 10/10/74 1000-007. - 1.00000000



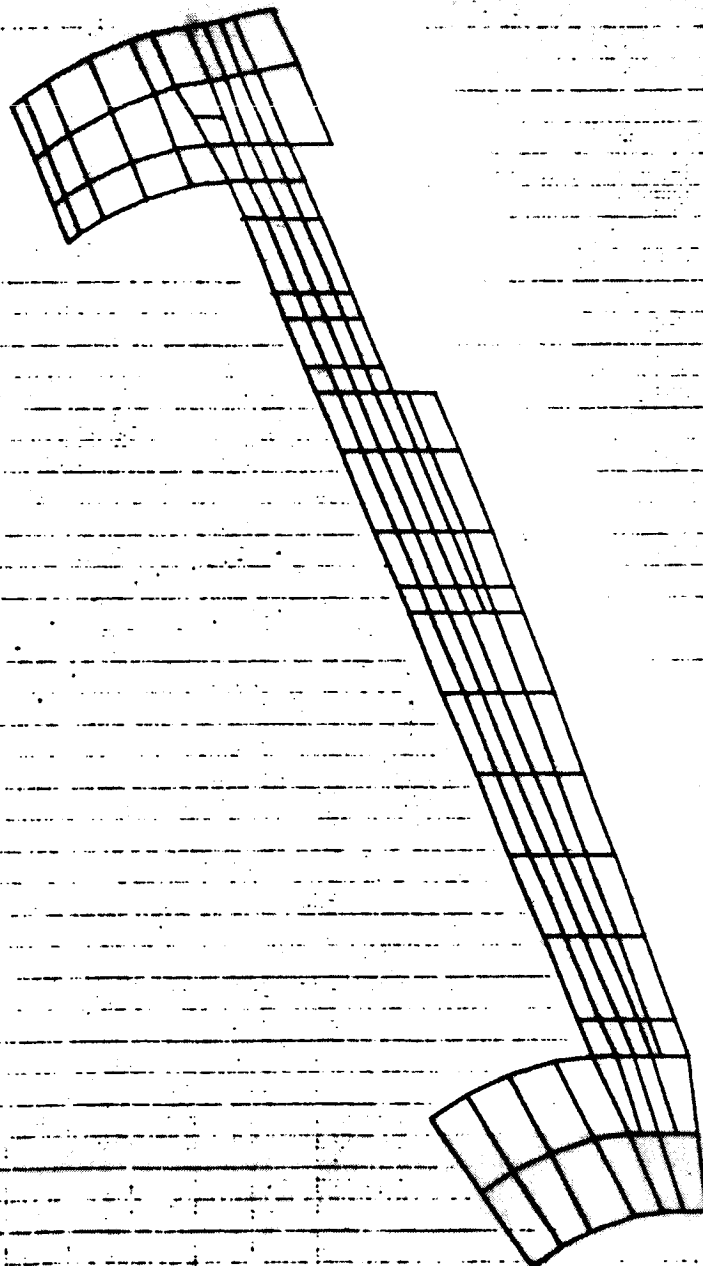
PLANE 1. CURVED SURFACE - OVER GAGE 1.00000000  
CURVED SURFACE - OVER GAGE 1.00000000  
FREE HOLE PLACED AT INTERFACE  
LOCAL COORD. SURFACE 40 HOLE 40 FREE. 1000.000

48 10/10/74 1000-007, = 1.00000000



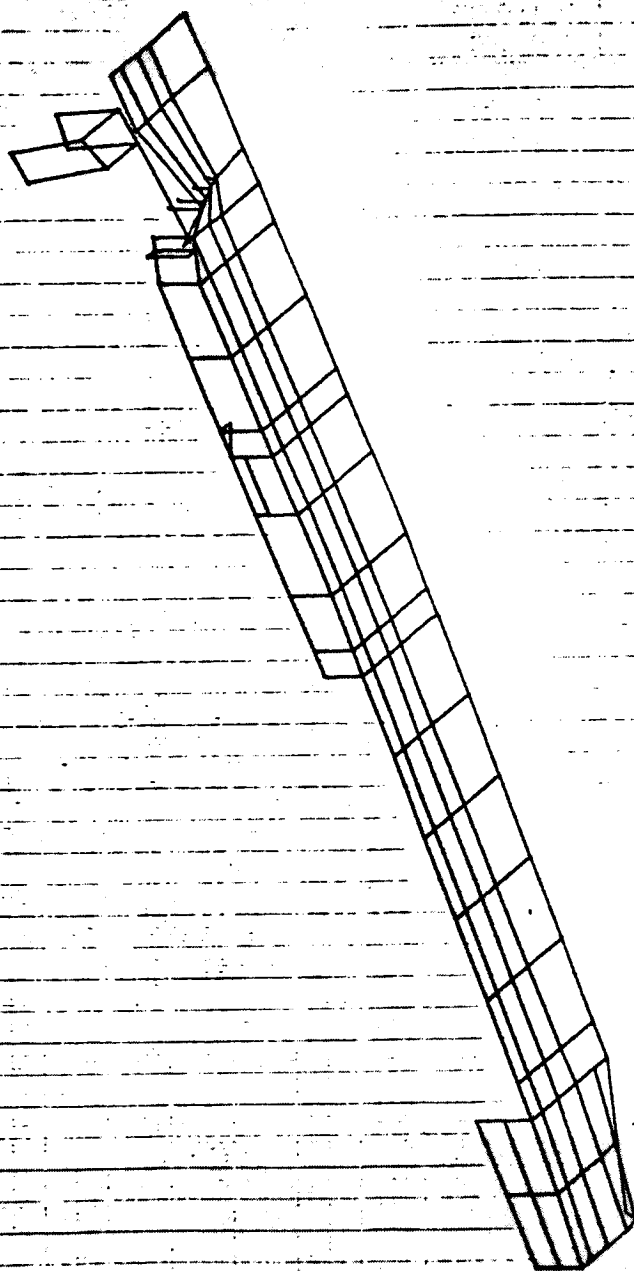
PHASE 1 ORBITER FUSELAGE-TYME CASE3 MODEL 2  
 BEING HALF OFF-LENS, .001 OFF-TRANS. AT WING 00-0/00077.  
 FREE MODES FINES AT INTERFACE  
 MODAL DETOR. SUBCASE 48 MODE 16 FREQ. 1330.480

16 00000000 00000000 = 1.00000000



PHASE 1. GEOMETRIC MODELING - OVER CASES MODEL 2  
 BEING HALF EFF. LONG. 100% EFF. TRANS. AT WING 40-0.000000  
 FREE MODES FIXED AT INTERFACE  
 MODAL SPECT. SURFACE 01 MODC 01 PRIC. 1994.711

10/10/74 0001-007. = 1.00000000



PHASE 1 SUBMITTER FUELAGE-SPIN CASE) MODEL 2  
 BEING HALF EFF. LONG. .08 ( EFF. TRANS. AT WING CO-2/SEFF.)  
 FREE MEMES FIRED AT INTERFACE  
 MODAL BEFOR. SUBCASE 48 MODE 49 FREQ. 1384.711

17 00/10/74 000-007, 1.0000000

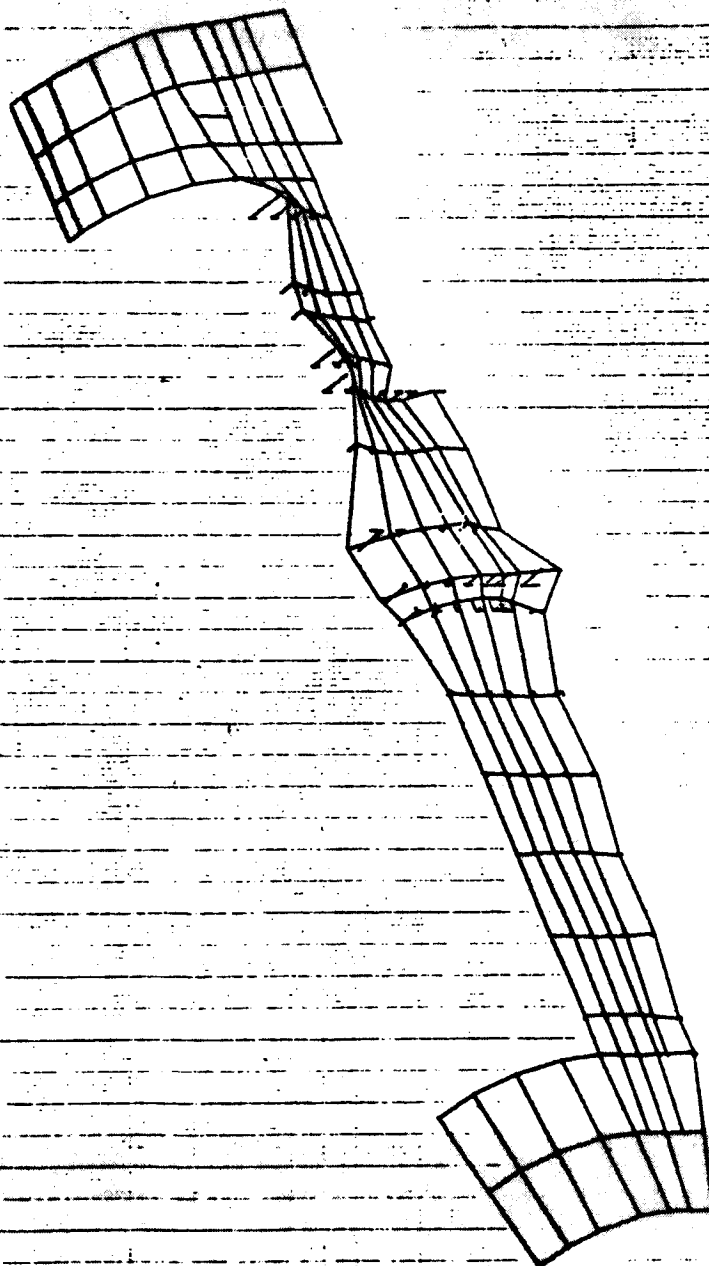
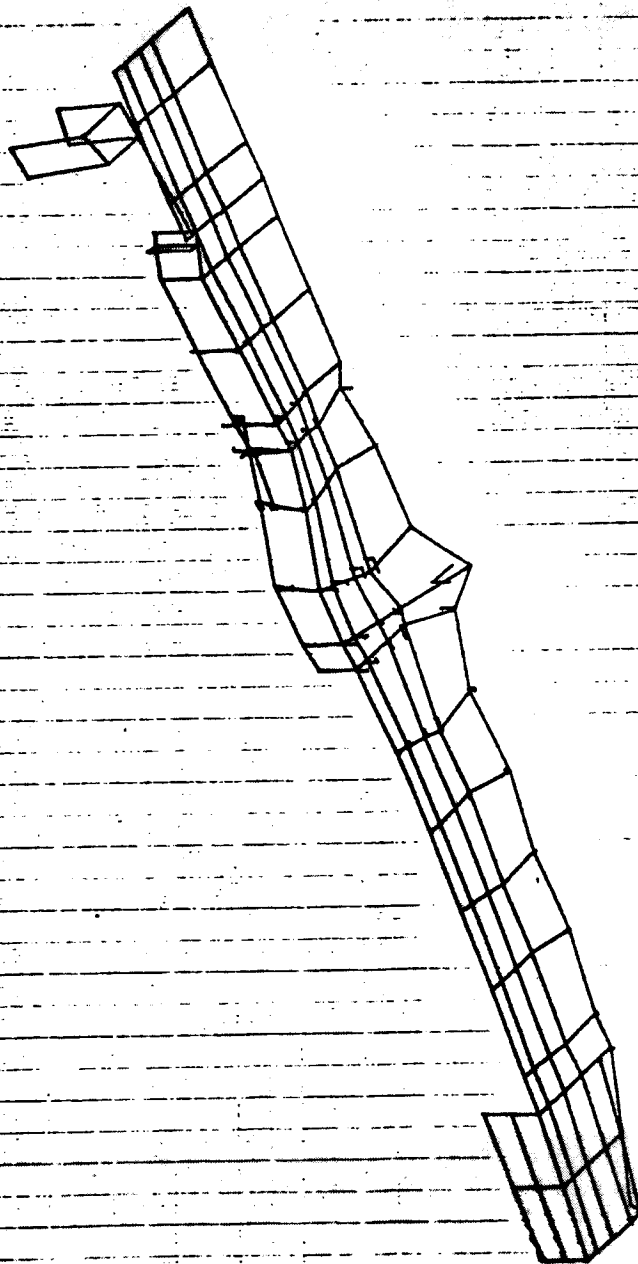
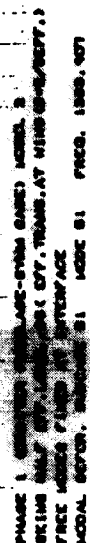


FIGURE 1. CONNECTED FINELINE-SPIN CASES MODEL 2  
 BEING ONLY 0.1% LONG, 0.1% OFF, TRANS AT 1100 0.5/0.577, 1  
 FREE MESH PLOTTED AT INTERFACE  
 MODAL BEHAV. SHOWN IN MODE NO. 1000, 1000, 0.00

80 10/10/74 000-007, u 1.0000000

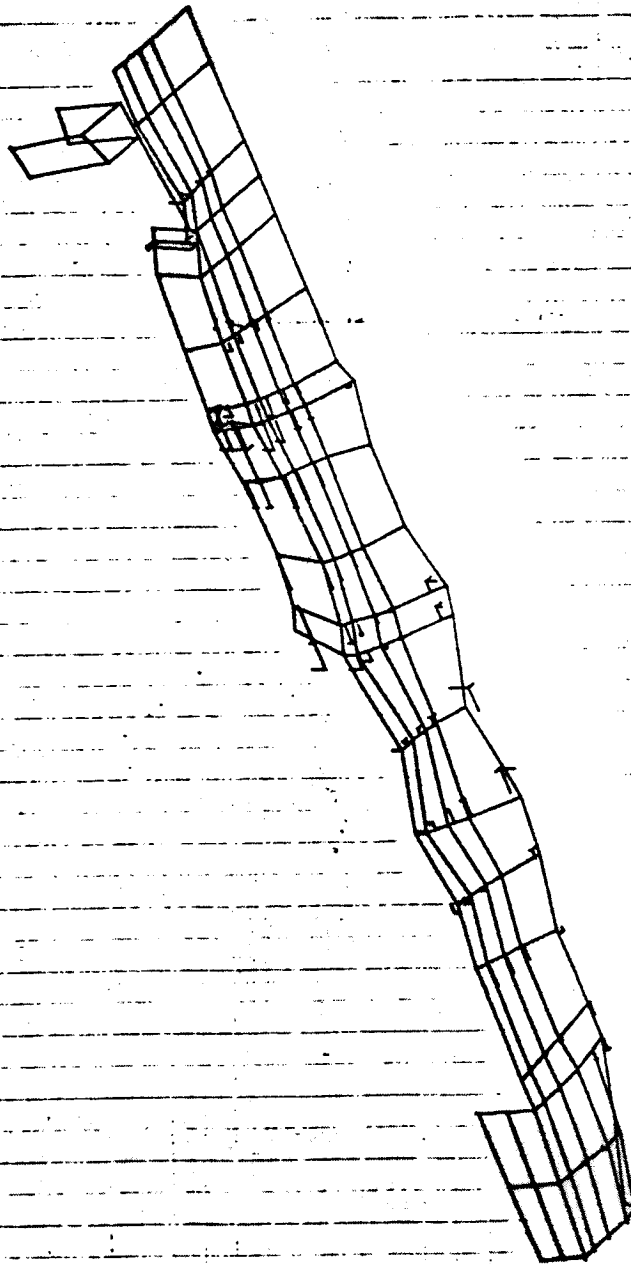


PHASE 1, 000000000-000000000 MODEL 2  
 BEING MAP 007.000.00 (007.000.00) AT WING 00-2/0077.)  
 PREC 000000000 AT INTERFAC  
 000000000. SURFACE 48 MODE 80 PREC. 1000.000



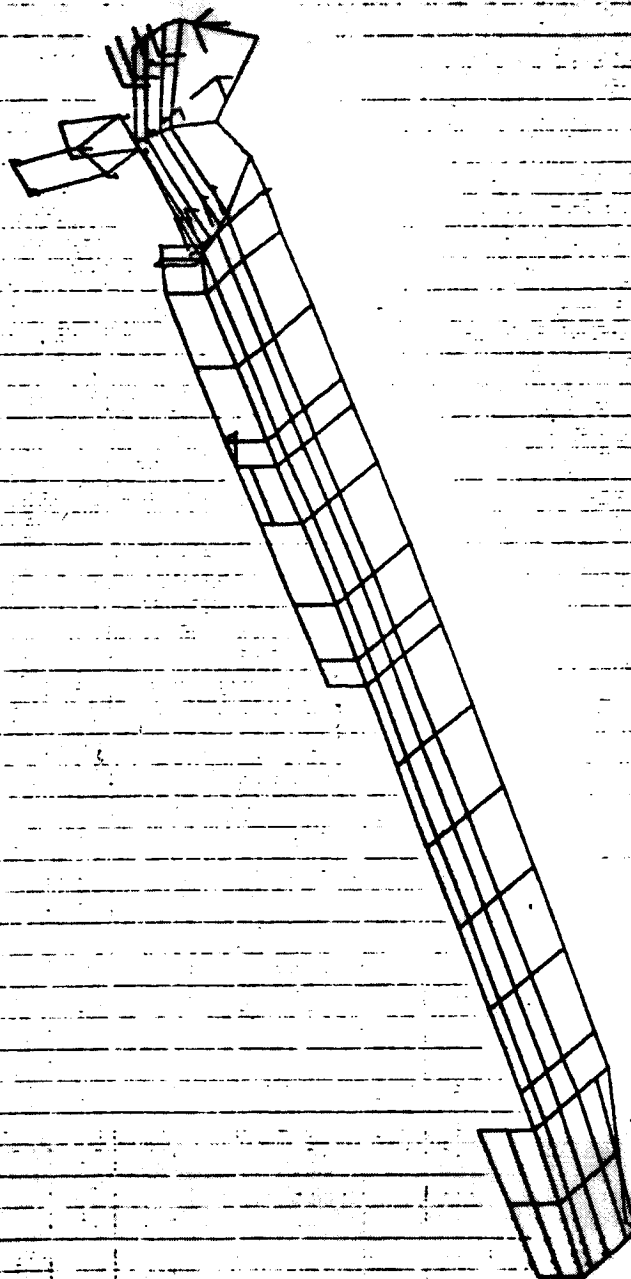


01 10/10/74 100-907, 0 1.00000000



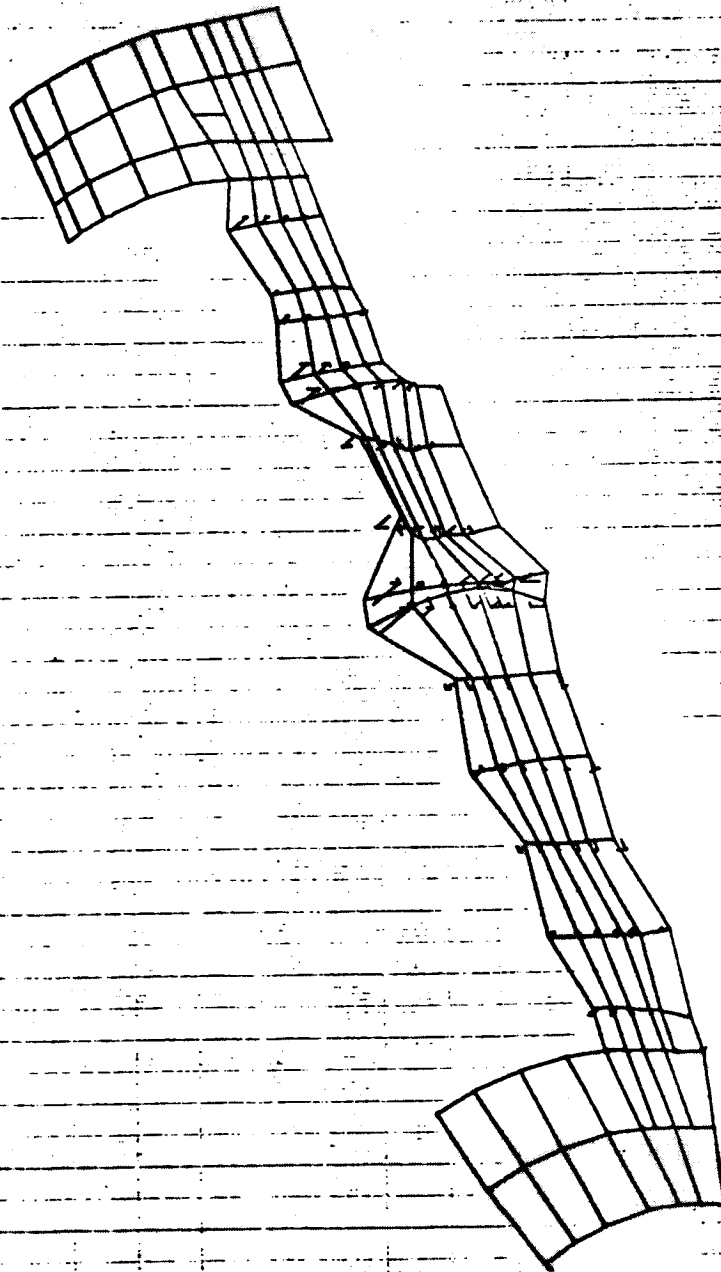
PHASE 1 CONSIDER FUSELAGE-SYMM CASE) MODEL 2  
 SKIN HALF OFF LONG. .06 ( EFF. TRANS. AT WING (0-2-SECT.))  
 FREE MODES FIXED AT INTERFACE  
 MODAL DEFOR. SURFACE 48 MODE 01 FREQ. 1993.407

00 10/18/74 000-007. 1.00000000



PHASE 1. ORBITING PLATFORM-871M CASED MODEL 8  
SKINS HALF CTT-1000, 100 CTT-1000, AT WING 0-2/2077.1  
FREE MOVED PITCH AT INTERFACE  
ACIAL DEVIC. MESSAGE 46 MODE 83 FREQ. 1428.704

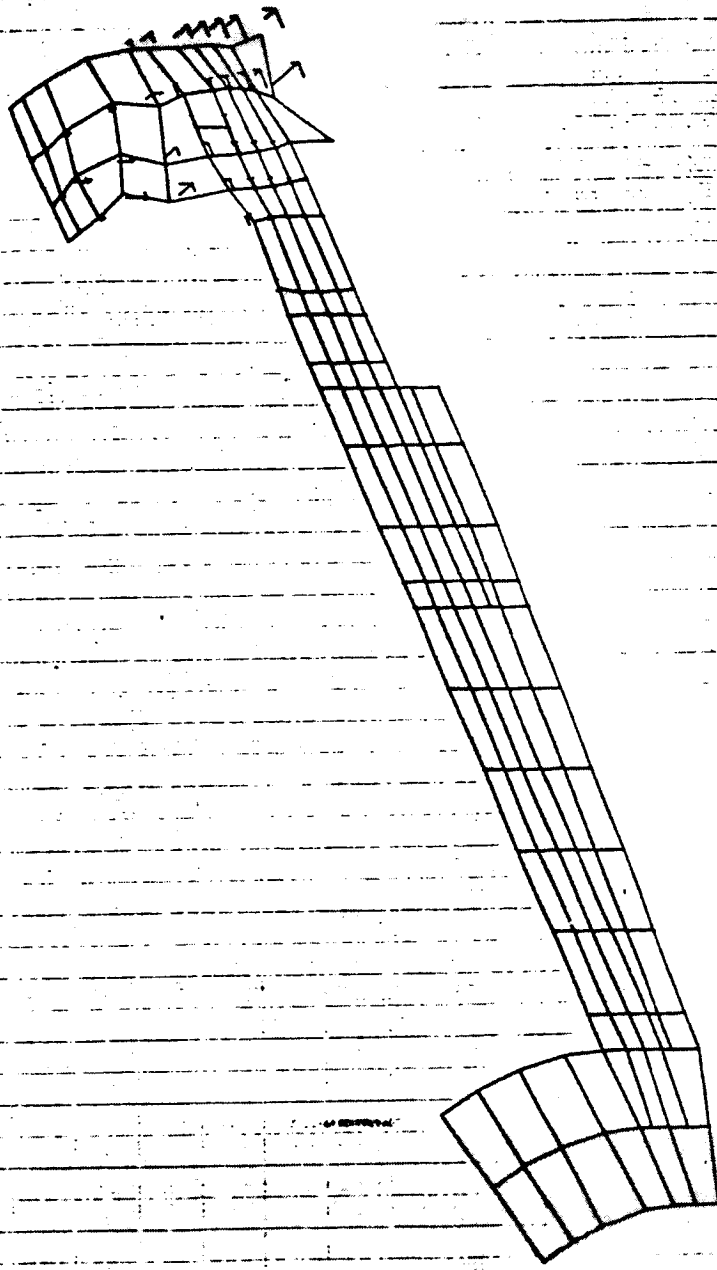
20 10/10/74 1001-007. - 1-00000000



PHASE 1 GEOMETRIC ANALYSIS - 3D CASE MODEL 2  
 BEING HALF OFF, LONG, 881 EY, TRANS. AT WING 0-5/2577.3  
 FREE MODES FINED AT INTERFACE  
 MODAL DETON. SUBCASE 03 MODE 03 FREQ. 1482.181

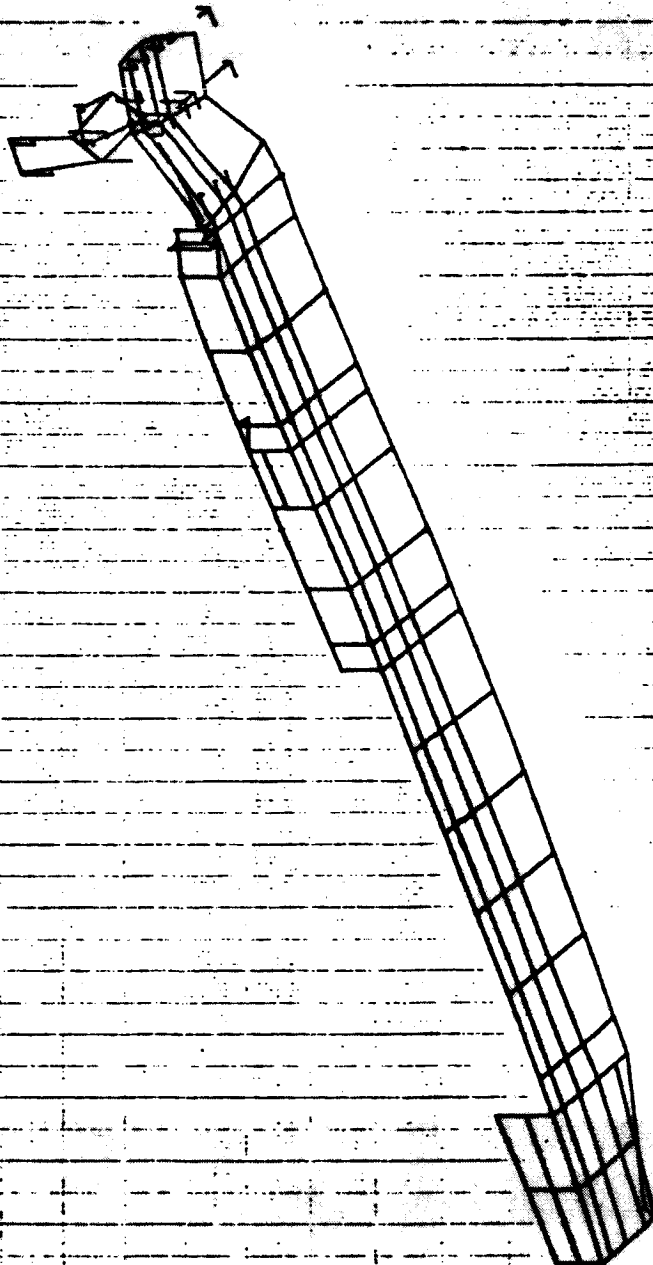
PHASE 1. CONSIDER PENDING-OWN CASE) MODEL  
ON THE WAY OFF-LINE, 88( EFF. TRANS. AT WIND 88-2/80077.)  
PRELIMINARY PHASE AT INTERFACE  
MODEL DEFER. SUNSHINE 48 MORE 83 PMSO. 1-28.181

31 10/12/74 0001-007. = 1.00000000



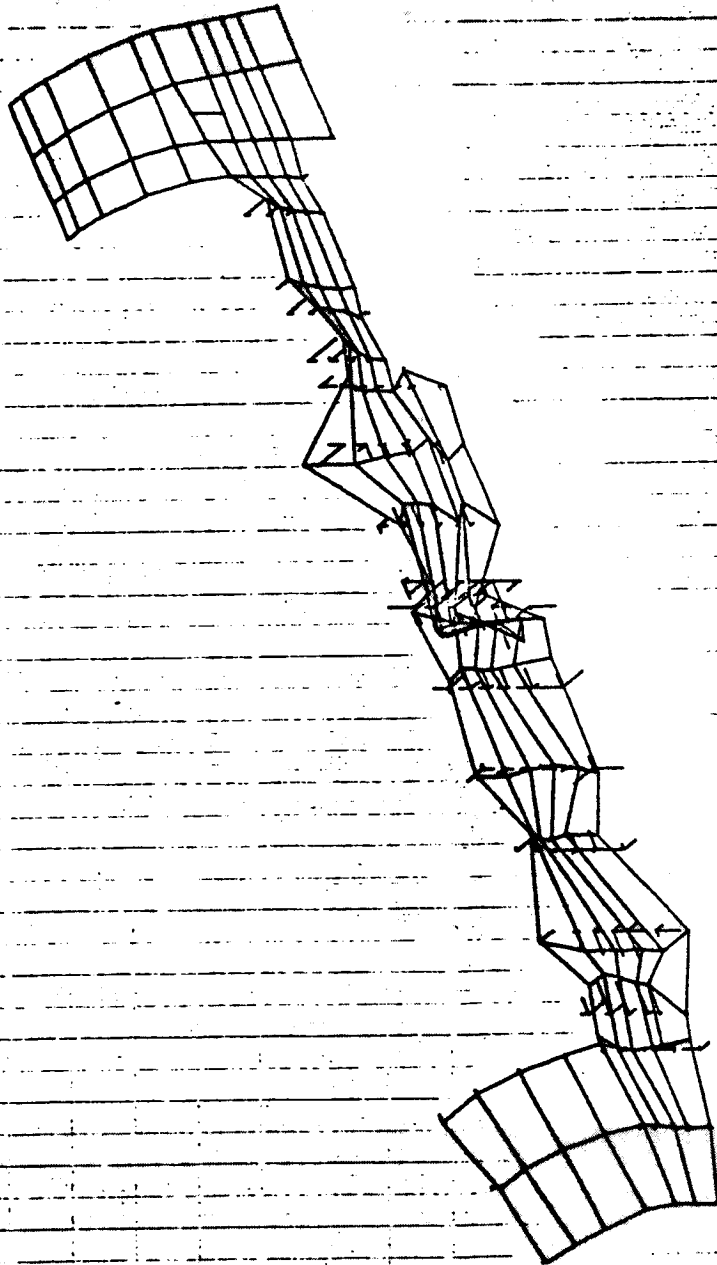
PHASE 1 CONSIDER PURLIN-67MM CASE) MODEL 2  
 SKIN HALF EFF. LONG. 88 (EFF. TRANS. AT WING 0-2/3 EFF.)  
 FREE MODES FIXED AT INTERFACE  
 MODAL SECTOR, SUBCASE 54 MODE 54 FREQ. 1478.259

04 10/10/74 1000-007 1.0000000



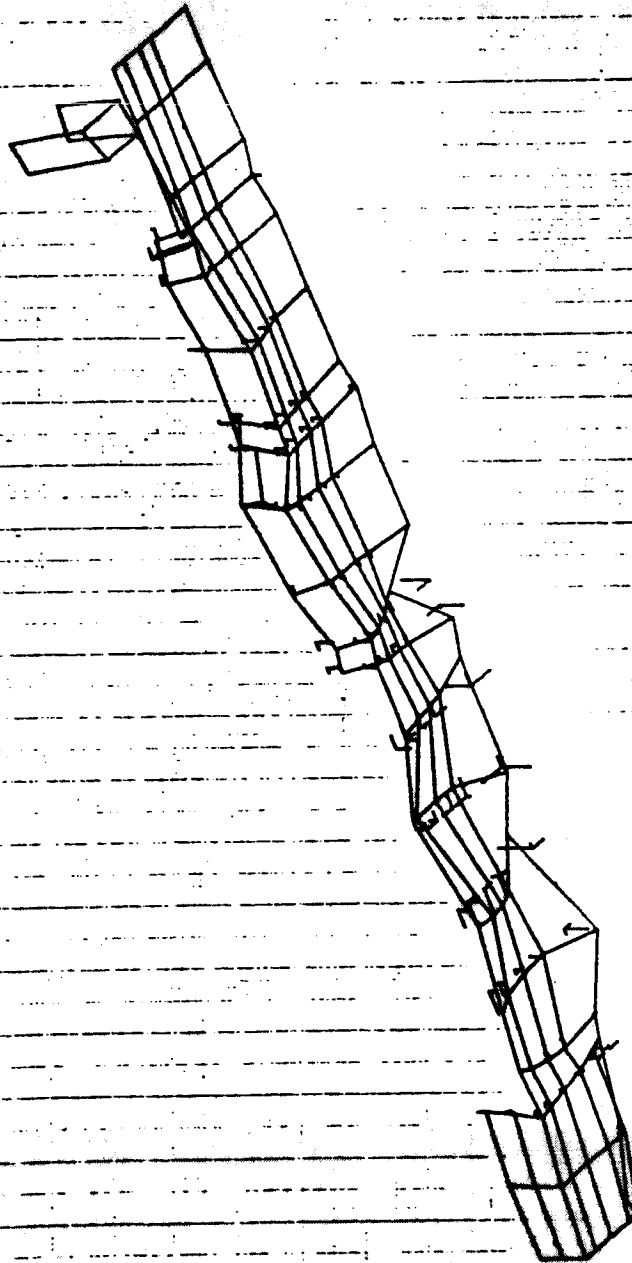
PAGE 1. CONTINUED FROM PAGE 00000000. 0  
RINGS MAY BE USED AS A 000. TRANS. AT 00000000. 0  
FREE RINGS FROM AN INTERFACE  
MODAL SUPPLY. 00000000 00 0000. 0000. 0000.

28 18/10/74 0001-007, 0 1.00000000



PHASE 1. CONSIDER FLARE-JACK-574M CASES MODEL 2  
BEING HALF EYE, LOW, -88 ( EYE, TRANS, AT NIM 00-5/9077.)  
FREE WINGS FIXED AT INTERFACE  
MODEL SETON, SUBCASE 85 MODE 85 FSCQ. 1483.441

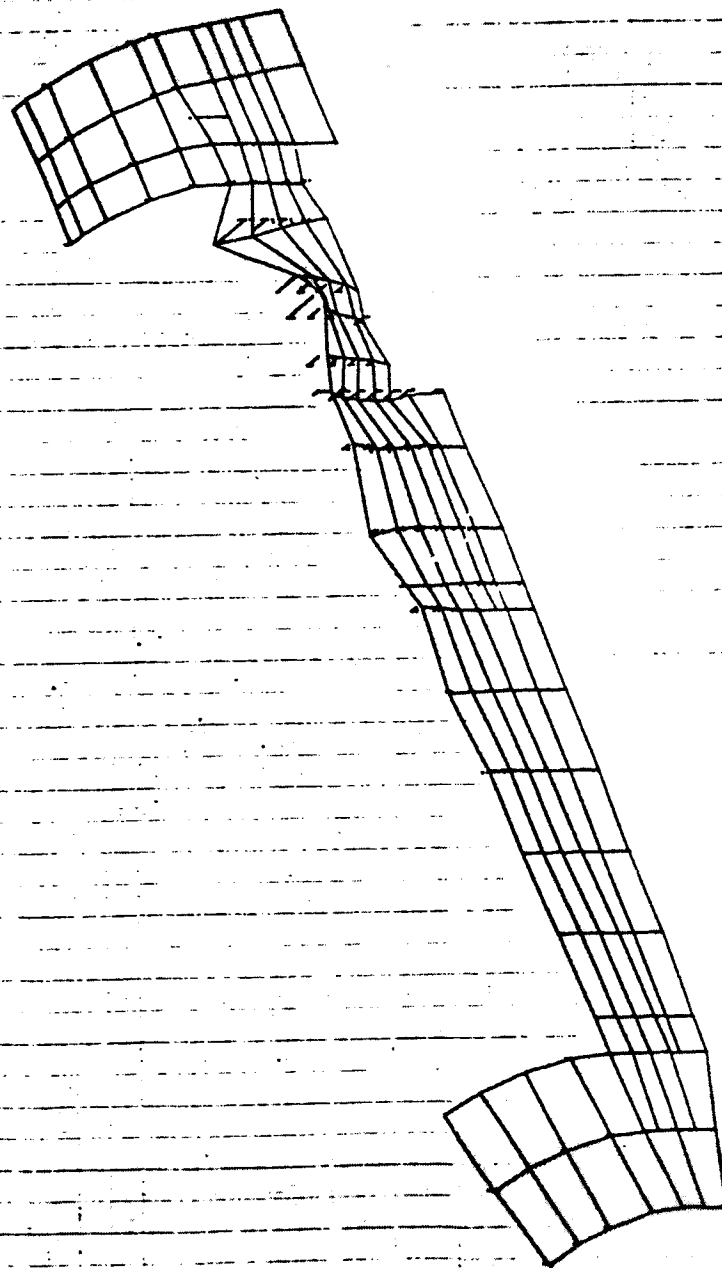
00 10-10-74 1001-027. - 1.00000000



PHASE 1. GEOMETRY FUSELAGE-STRUT GAGE) MODEL 5  
 BEING HALF EFF. LONG. 0.81 EFF. TRANS. AT WING 0.2/0.77.1  
 FREE MEMES PIERCE AT INTERFACE  
 MODAL SECTION. SURFACE 48 MODC 68 FREED. 1489.441

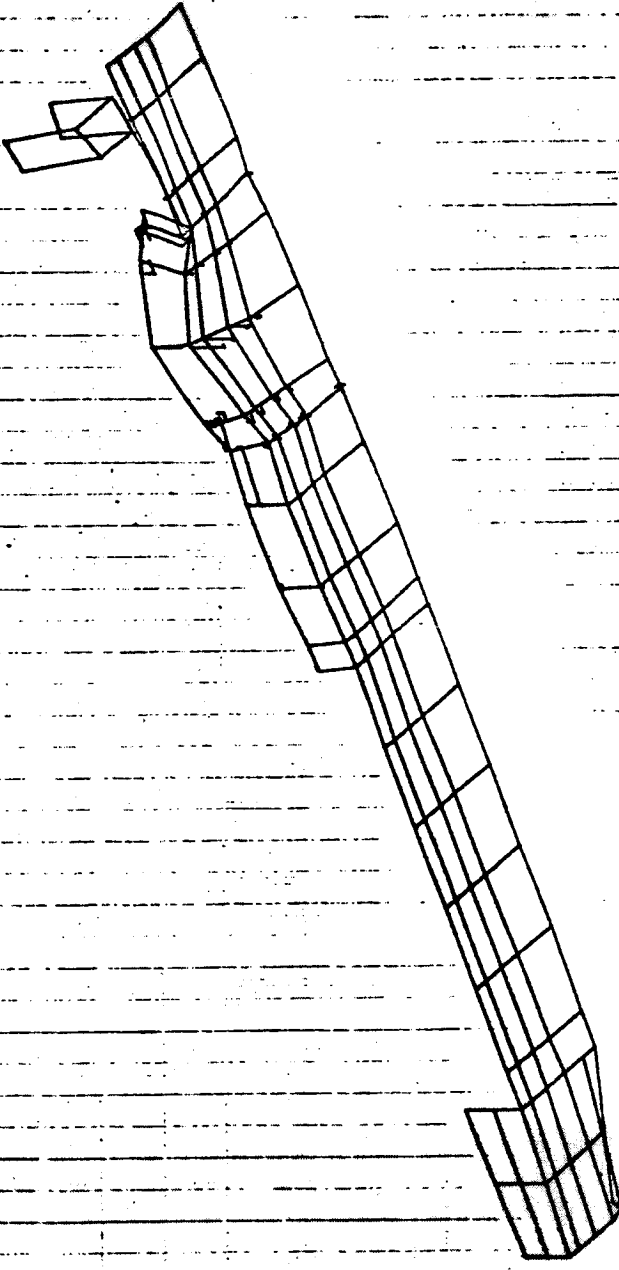


22 10/18/74 0001-007. = 1.00000000



PHASE 1 CONTINUED SUBCAGE-SYMA CASE1 MODEL 2  
 SKINS HALF EFF. LONG. .88 ( EFF. TRANS. AT WING (8-2/3 EFF. )  
 FREE MOSES FIXED AT INTERFACE  
 LOCAL DEFOR. SUBCAGE 88 MODC 88 FREC. 1004.048

10/10/74 100-007, 0 1.00000000



PHASE 1 CONSIDER FURCLAGE-OTMA CASE) MODEL 2  
 SKING HALF STP.LONG.08 ( CTF. TRANS.AT WIND 08-0/0077.)  
 FREE MODES FIXED AT INTERFACE  
 MODAL ORDER. SUBMODE 48 MODE 98 FREQ. 1884.098

24 10/10/74 100-007. = 1.00000000

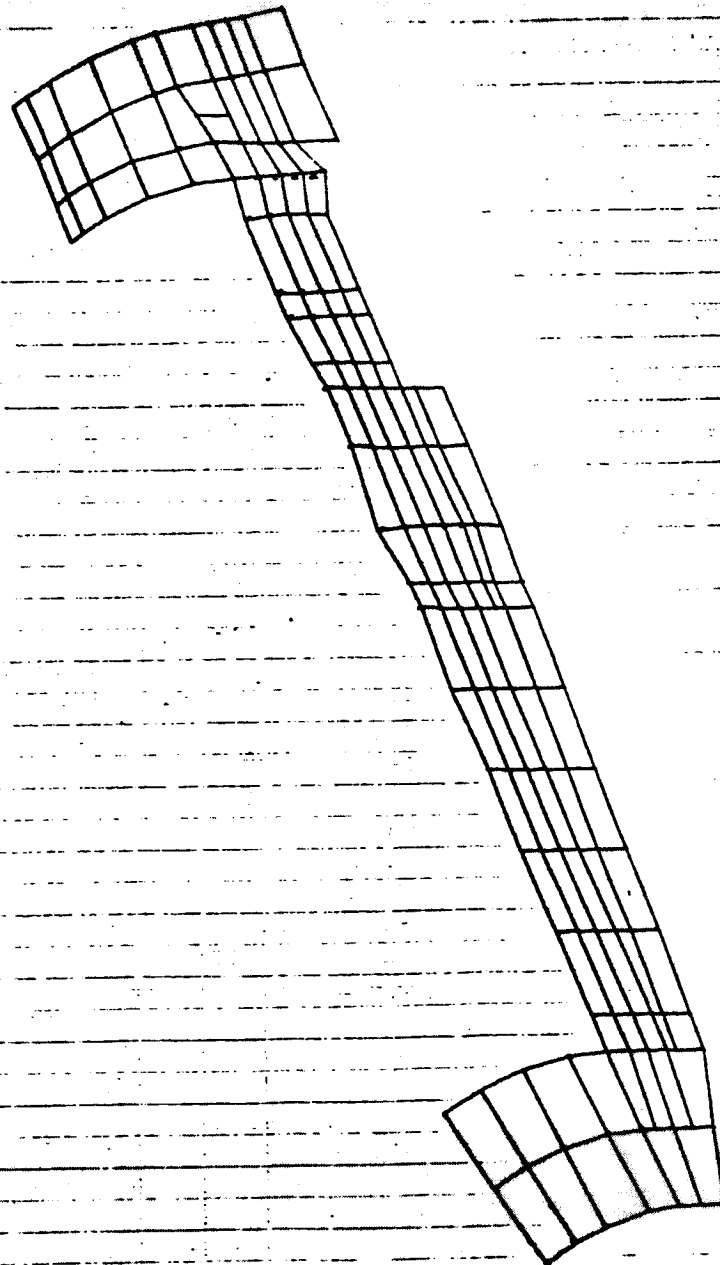
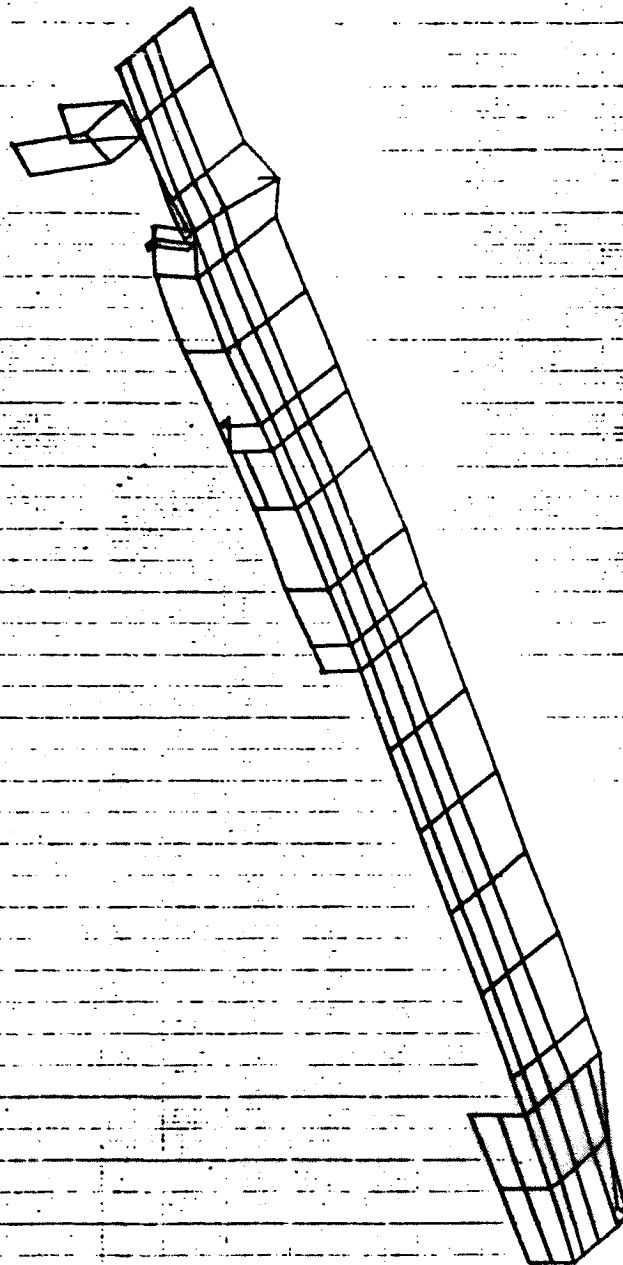


FIGURE 1. GEOMETRY PRELIMINARY-SPIN CASE) MODEL 2  
 BEING ONLY EFF. LONG. BE ( EFF. TRANS. AT WING 00-2/DEFF.)  
 FREE MODES FIXED AT INTERFACE  
 MODAL DEFOR. SURFACE 07 MODE 07 FREQ. 1871.148

BT 18/18/74: 1111-1111. 1.00000000



PHASE 1 COMBIVER FUEL-LINE-OTM CASE) MODEL 8  
 SKIN HALF CY. LONG. 1881 CY. TRANS. AT WING (8-2/2577.)  
 FREE MODES FIXED AT INTERFACES  
 MODAL DETOR. SUBCASE 48 MODE 57 FREQ. 1871.148

**Appendix B5**  
**INPUT BULK DATA/PHASE I ANALYSIS: MODEL II**  
**WING**

0 0/10/79 RECOVERS 85 PERCENT EFF.0

CARD		CASE CONTROL DECK FCH0	
COUNT			
1	1	TITLE # PHASE 1 SUBMITTER WING	
2	2	SUBMITTER # 0/10/79 RECOVERS 85 PERCENT EFF.0	
3	3	MAXIMUMS # 30000	
4	4	METHOD # 2	
5	5	MPC # 3000	
6	6	SUBCASE # 1	
7	7	MODE # 20	
8	8	LAUNCH # FIVE MINES FIXED AT INTERFACE	
9	9	OUTPUT # ALL	
10	10	VECTOR # ALL	
11	11	OUTPUT PLOT	
12	12	SET 1 # INCLUDE 3101 THRU 3125	
13	13	SET 2 # INCLUDE 3201 THRU 3227	
14	14	SET 3 # INCLUDE 3301 THRU 3327	
15	15	SET 4 # INCLUDE 3401 THRU 3427	
16	16	SET 5 # INCLUDE 3501 THRU 3527	
17	17	SET 6 # INCLUDE 3601 THRU 3627	
18	18	SET 7 # INCLUDE 3701 THRU 3727	
19	19	SET 8 # INCLUDE 3801 THRU 3827	
20	20	SET 9 # INCLUDE 3901 THRU 3927	
21	21	SET 10 # INCLUDE 4001 THRU 4027	
22	22	SET 11 # INCLUDE 4101 THRU 4127	
23	23	SET 12 # INCLUDE 4201 THRU 4227	
24	24	SET 13 # INCLUDE 4301 THRU 4327	
25	25	SET 14 # INCLUDE 4401 THRU 4427	

SEE USER INFORMATION MESSAGE 207. MUX DATA NOT SORTED, XSDRT WILL RE-ORDER DECK.

9/10/74 XCOVERS AS PERCENT FFF.B

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1-	CONV00	3582	3474	3624	3100	315				
2-	CONV00	3620	3601	3651	3600	125				
3-	CONV00	3630	3605	3655	3600	001				
4-	CONV00	3631	3609	3659	3631	017				
5-	CONV00	3632	3613	3663	3632	061				
6-	CONV00	3634	3617	3667	3632	061				
7-	CONV00	3634	3621	3671	3634	028				
8-	CONV00	3635	3622	3672	3639	173				
9-	CONV00	3635	3622	3672	3601	066				
10-	CONV00	3635	3606	3616	3631	065				
11-	CONV00	3635	3610	3660	3632	061				
12-	CONV00	3635	3614	3664	3632	061				
13-	CONV00	3635	3618	3668	3632	061				
14-	CONV00	3635	3622	3672	3634	028				
15-	CONV00	3635	0	0	0	0	3.5		47.84	EC0000
16-	CONV00	3635	0	0	0	0	3.5		57.5138	EC0001
17-	CONV00	3635	0	0	0	0	3.5		24.0518	EC0002
18-	CONV00	3635	3001	295.7536-16.6311.0003	245.7536-13.75					
19-	CONV00	3635	-16.4631	11.0003						
20-	CONV00	3635	3601	3617	3621	3402	3401	3018	3022	
21-	CONV00	3635	3603	3621	3121	3404	3403	3018	3122	
22-	CONV00	3635	3605	3617	3117	3406	3403	3018	3114	
23-	CONV00	3635	3607	3617	3113	3408	3403	3122	3222	
24-	CONV00	3635	3609	3617	3121	3412	3409	3118	3216	
25-	CONV00	3635	3611	3617	3117	3416	3409	3114	3218	
26-	CONV00	3635	3613	3617	3113	3418	3417	3222	3318	
27-	CONV00	3635	3615	3621	3121	3420	3417	3218	3318	
28-	CONV00	3635	3617	3617	3117	3422	3417	3218	3318	
29-	CONV00	3635	3619	3617	3113	3424	3417	3218	3318	
30-	CONV00	3635	3621	3617	3113	3426	3417	3218	3318	
31-	CONV00	3635	3623	3617	3113	3428	3417	3218	3318	
32-	CONV00	3635	3625	3617	3113	3430	3427	3318	3418	
33-	CONV00	3635	3627	3617	3113	3432	3427	3318	3418	
34-	CONV00	3635	3629	3617	3113	3434	3427	3318	3418	
35-	CONV00	3635	3631	3617	3113	3436	3427	3318	3418	
36-	CONV00	3635	3633	3617	3113	3438	3427	3318	3418	
37-	CONV00	3635	3635	3617	3113	3440	3427	3318	3418	
38-	CONV00	3635	3637	3617	3113	3442	3427	3318	3418	
39-	CONV00	3635	3639	3617	3113	3444	3427	3318	3418	
40-	CONV00	3635	3641	3617	3113	3446	3427	3318	3418	
41-	CONV00	3635	3643	3617	3113	3448	3427	3318	3418	
42-	CONV00	3635	3645	3617	3113	3450	3427	3318	3418	
43-	CONV00	3635	3647	3617	3113	3452	3427	3318	3418	
44-	CONV00	3635	3649	3617	3113	3454	3427	3318	3418	
45-	CONV00	3635	3651	3617	3113	3456	3427	3318	3418	
46-	CONV00	3635	3653	3617	3113	3458	3427	3318	3418	
47-	CONV00	3635	3655	3617	3113	3460	3427	3318	3418	
48-	CONV00	3635	3657	3617	3113	3462	3427	3318	3418	
49-	CONV00	3635	3659	3617	3113	3464	3427	3318	3418	
50-	CONV00	3635	3661	3617	3113	3466	3427	3318	3418	

CHART 1 XCOVERS WHICH

9/10/74 SCOWERS AS PERCENT EFF.N

CARD COUNT	1	2	3	4	5	6	7	8	9	10
51-	CHDD	3463	3463	3463	3463	3463	3463	3463	3463	3463
52-	CHDD	3465	3465	3465	3465	3465	3465	3465	3465	3465
53-	CHDD	3467	3467	3467	3467	3467	3467	3467	3467	3467
54-	CHDD	3469	3469	3469	3469	3469	3469	3469	3469	3469
55-	CHDD	3471	3471	3471	3471	3471	3471	3471	3471	3471
56-	CHDD	3473	3473	3473	3473	3473	3473	3473	3473	3473
57-	CHDD	3475	3475	3475	3475	3475	3475	3475	3475	3475
58-	CHDD	3477	3477	3477	3477	3477	3477	3477	3477	3477
59-	CHDD	3479	3479	3479	3479	3479	3479	3479	3479	3479
60-	CHDD	3481	3481	3481	3481	3481	3481	3481	3481	3481
61-	CHDD	3483	3483	3483	3483	3483	3483	3483	3483	3483
62-	CHDD	3485	3485	3485	3485	3485	3485	3485	3485	3485
63-	CHDD	3487	3487	3487	3487	3487	3487	3487	3487	3487
64-	CHDD	3489	3489	3489	3489	3489	3489	3489	3489	3489
65-	CHDD	3491	3491	3491	3491	3491	3491	3491	3491	3491
66-	CHDD	3493	3493	3493	3493	3493	3493	3493	3493	3493
67-	CHDD	3495	3495	3495	3495	3495	3495	3495	3495	3495
68-	CHDD	3497	3497	3497	3497	3497	3497	3497	3497	3497
69-	CHDD	3499	3499	3499	3499	3499	3499	3499	3499	3499
70-	CHDD	3501	3501	3501	3501	3501	3501	3501	3501	3501
71-	CHDD	3503	3503	3503	3503	3503	3503	3503	3503	3503
72-	CHDD	3505	3505	3505	3505	3505	3505	3505	3505	3505
73-	CHDD	3507	3507	3507	3507	3507	3507	3507	3507	3507
74-	CHDD	3509	3509	3509	3509	3509	3509	3509	3509	3509
75-	CHDD	3511	3511	3511	3511	3511	3511	3511	3511	3511
76-	CHDD	3513	3513	3513	3513	3513	3513	3513	3513	3513
77-	CHDD	3515	3515	3515	3515	3515	3515	3515	3515	3515
78-	CHDD	3517	3517	3517	3517	3517	3517	3517	3517	3517
79-	CHDD	3519	3519	3519	3519	3519	3519	3519	3519	3519
80-	CHDD	3521	3521	3521	3521	3521	3521	3521	3521	3521
81-	CHDD	3523	3523	3523	3523	3523	3523	3523	3523	3523
82-	CHDD	3525	3525	3525	3525	3525	3525	3525	3525	3525
83-	CHDD	3527	3527	3527	3527	3527	3527	3527	3527	3527
84-	CHDD	3529	3529	3529	3529	3529	3529	3529	3529	3529
85-	CHDD	3531	3531	3531	3531	3531	3531	3531	3531	3531
86-	CHDD	3533	3533	3533	3533	3533	3533	3533	3533	3533
87-	CHDD	3535	3535	3535	3535	3535	3535	3535	3535	3535
88-	CHDD	3537	3537	3537	3537	3537	3537	3537	3537	3537
89-	CHDD	3539	3539	3539	3539	3539	3539	3539	3539	3539
90-	CHDD	3541	3541	3541	3541	3541	3541	3541	3541	3541
91-	CHDD	3543	3543	3543	3543	3543	3543	3543	3543	3543
92-	CHDD	3545	3545	3545	3545	3545	3545	3545	3545	3545
93-	CHDD	3547	3547	3547	3547	3547	3547	3547	3547	3547
94-	CHDD	3549	3549	3549	3549	3549	3549	3549	3549	3549
95-	CHDD	3551	3551	3551	3551	3551	3551	3551	3551	3551
96-	CHDD	3553	3553	3553	3553	3553	3553	3553	3553	3553
97-	CHDD	3555	3555	3555	3555	3555	3555	3555	3555	3555
98-	CHDD	3557	3557	3557	3557	3557	3557	3557	3557	3557
99-	CHDD	3559	3559	3559	3559	3559	3559	3559	3559	3559
100-	CHDD	3561	3561	3561	3561	3561	3561	3561	3561	3561



9/10/74 SCOVERS 85 PERCENT EFF.4

CARD COUNT	1	2	3	4	5	6	7	S O U R T F D H U L K D A T A E C H O				9	0	10
								8	8	8	8			
101	CHUD	3652	3650	3650	3305	3653	3650	3304	3304	3304	3304	3401		
102	CHUD	3654	3650	3650	3321	3655	3650	3313	3313	3313	3313	3417		
103	CHUD	3656	3650	3650	3321	3657	3650	3313	3313	3313	3313	3417		
104	CHUD	3658	3650	3650	3321	3659	3650	3313	3313	3313	3313	3417		
105	CHUD	3660	3650	3650	3321	3661	3650	3313	3313	3313	3313	3417		
106	CHUD	3662	3650	3650	3321	3663	3650	3313	3313	3313	3313	3417		
107	CHUD	3664	3650	3650	3321	3665	3650	3313	3313	3313	3313	3417		
108	CHUD	3666	3650	3650	3321	3667	3650	3313	3313	3313	3313	3417		
109	CHUD	3668	3650	3650	3321	3669	3650	3313	3313	3313	3313	3417		
110	CHUD	3670	3650	3650	3321	3671	3650	3313	3313	3313	3313	3417		
111	CHUD	3672	3650	3650	3321	3673	3650	3313	3313	3313	3313	3417		
112	CHUD	3674	3650	3650	3321	3675	3650	3313	3313	3313	3313	3417		
113	CHUD	3676	3650	3650	3321	3677	3650	3313	3313	3313	3313	3417		
114	CHUD	3678	3650	3650	3321	3679	3650	3313	3313	3313	3313	3417		
115	CHUD	3680	3650	3650	3321	3681	3650	3313	3313	3313	3313	3417		
116	CHUD	3682	3650	3650	3321	3683	3650	3313	3313	3313	3313	3417		
117	CHUD	3684	3650	3650	3321	3685	3650	3313	3313	3313	3313	3417		
118	CHUD	3686	3650	3650	3321	3687	3650	3313	3313	3313	3313	3417		
119	CHUD	3688	3650	3650	3321	3689	3650	3313	3313	3313	3313	3417		
120	CHUD	3690	3650	3650	3321	3691	3650	3313	3313	3313	3313	3417		
121	CHUD	3692	3650	3650	3321	3693	3650	3313	3313	3313	3313	3417		
122	CHUD	3694	3650	3650	3321	3695	3650	3313	3313	3313	3313	3417		
123	CHUD	3696	3650	3650	3321	3697	3650	3313	3313	3313	3313	3417		
124	CHUD	3698	3650	3650	3321	3699	3650	3313	3313	3313	3313	3417		
125	CHUD	3700	3650	3650	3321	3701	3650	3313	3313	3313	3313	3417		
126	CHUD	3702	3650	3650	3321	3703	3650	3313	3313	3313	3313	3417		
127	CHUD	3704	3650	3650	3321	3705	3650	3313	3313	3313	3313	3417		
128	CHUD	3706	3650	3650	3321	3707	3650	3313	3313	3313	3313	3417		
129	CHUD	3708	3650	3650	3321	3709	3650	3313	3313	3313	3313	3417		
130	CHUD	3710	3650	3650	3321	3711	3650	3313	3313	3313	3313	3417		
131	CHUD	3712	3650	3650	3321	3713	3650	3313	3313	3313	3313	3417		
132	CHUD	3714	3650	3650	3321	3715	3650	3313	3313	3313	3313	3417		
133	CHUD	3716	3650	3650	3321	3717	3650	3313	3313	3313	3313	3417		
134	CHUD	3718	3650	3650	3321	3719	3650	3313	3313	3313	3313	3417		
135	CHUD	3720	3650	3650	3321	3721	3650	3313	3313	3313	3313	3417		
136	CHUD	3722	3650	3650	3321	3723	3650	3313	3313	3313	3313	3417		
137	CHUD	3724	3650	3650	3321	3725	3650	3313	3313	3313	3313	3417		
138	CHUD	3726	3650	3650	3321	3727	3650	3313	3313	3313	3313	3417		
139	CHUD	3728	3650	3650	3321	3729	3650	3313	3313	3313	3313	3417		
140	CHUD	3730	3650	3650	3321	3731	3650	3313	3313	3313	3313	3417		
141	CHUD	3732	3650	3650	3321	3733	3650	3313	3313	3313	3313	3417		
142	CHUD	3734	3650	3650	3321	3735	3650	3313	3313	3313	3313	3417		
143	CHUD	3736	3650	3650	3321	3737	3650	3313	3313	3313	3313	3417		
144	CHUD	3738	3650	3650	3321	3739	3650	3313	3313	3313	3313	3417		
145	CHUD	3740	3650	3650	3321	3741	3650	3313	3313	3313	3313	3417		
146	CHUD	3742	3650	3650	3321	3743	3650	3313	3313	3313	3313	3417		
147	CHUD	3744	3650	3650	3321	3745	3650	3313	3313	3313	3313	3417		
148	CHUD	3746	3650	3650	3321	3747	3650	3313	3313	3313	3313	3417		
149	CHUD	3748	3650	3650	3321	3749	3650	3313	3313	3313	3313	3417		
150	CHUD	3750	3650	3650	3321	3751	3650	3313	3313	3313	3313	3417		

9/10/74 SCOWERS 85 PERCENT EFF.M

CARD	1	2	3	4	5	6	7	8	9	10
151-	CSHU AR	3112	3101	3413	3513	3517	3412			
152-	CSHU AR	3113	3101	3409	3509	3513	3413			
153-	CSHU AR	3114	3101	3405	3505	3505	3405			
154-	CSHU AR	3115	3101	3401	3501	3501	3401			
155-	CSHU AR	3116	3101	3417	3517	3517	3417			
156-	CSHU AR	3117	3101	3413	3513	3513	3413			
157-	CSHU AR	3118	3101	3406	3506	3506	3406			
158-	CSHU AR	3119	3101	3401	3501	3501	3401			
159-	CSHU AR	3120	3101	3417	3517	3517	3417			
160-	CSHU AR	3121	3121	3413	3513	3513	3413			
161-	CSHU AR	3122	3121	3401	3501	3501	3401			
162-	CSHU AR	3123	3121	3406	3506	3506	3406			
163-	CSHU AR	3124	3121	3401	3501	3501	3401			
164-	CSHU AR	3125	3121	3417	3517	3517	3417			
165-	CSHU AR	3126	3121	3413	3513	3513	3413			
166-	CSHU AR	3127	3121	3406	3506	3506	3406			
167-	CSHU AR	3128	3121	3401	3501	3501	3401			
168-	CSHU AR	3129	3121	3417	3517	3517	3417			
169-	CSHU AR	3130	3121	3413	3513	3513	3413			
170-	CSHU AR	3131	3121	3406	3506	3506	3406			
171-	CSHU AR	3132	3121	3401	3501	3501	3401			
172-	CSHU AR	3133	3121	3417	3517	3517	3417			
173-	CSHU AR	3134	3121	3413	3513	3513	3413			
174-	CSHU AR	3135	3121	3406	3506	3506	3406			
175-	CSHU AR	3136	3121	3401	3501	3501	3401			
176-	CSHU AR	3137	3121	3417	3517	3517	3417			
177-	CSHU AR	3138	3121	3413	3513	3513	3413			
178-	CSHU AR	3139	3121	3406	3506	3506	3406			
179-	CSHU AR	3140	3121	3401	3501	3501	3401			
180-	CSHU AR	3141	3121	3417	3517	3517	3417			
181-	CSHU AR	3142	3121	3413	3513	3513	3413			
182-	CSHU AR	3143	3121	3406	3506	3506	3406			
183-	CSHU AR	3144	3121	3401	3501	3501	3401			
184-	CSHU AR	3145	3121	3417	3517	3517	3417			
185-	CSHU AR	3146	3121	3413	3513	3513	3413			
186-	CSHU AR	3147	3121	3406	3506	3506	3406			
187-	CSHU AR	3148	3121	3401	3501	3501	3401			
188-	CSHU AR	3149	3121	3417	3517	3517	3417			
189-	CSHU AR	3150	3121	3413	3513	3513	3413			
190-	CSHU AR	3151	3121	3406	3506	3506	3406			
191-	CSHU AR	3152	3121	3401	3501	3501	3401			
192-	CSHU AR	3153	3121	3417	3517	3517	3417			
193-	CSHU AR	3154	3121	3413	3513	3513	3413			
194-	CSHU AR	3155	3121	3406	3506	3506	3406			
195-	CSHU AR	3156	3121	3401	3501	3501	3401			
196-	CSHU AR	3157	3121	3417	3517	3517	3417			
197-	CSHU AR	3158	3121	3413	3513	3513	3413			
198-	CSHU AR	3159	3121	3406	3506	3506	3406			
199-	CSHU AR	3160	3121	3401	3501	3501	3401			
200-	CSHU AR	3161	3121	3417	3517	3517	3417			

9/10/74 SCWERS 85 PERCENT EFF.8

CARD COUNT	1	2	3	4	5	6	7	8	9	10
201-	CSHFAR	3310	3301	3217	3317	3314	3218			
202-	CSHFAR	3311	3301	3217	3313	3314	3214			
203-	CSHFAR	3312	3301	3200	3300	3310	3210			
204-	CSHFAR	3313	3301	3200	3305	3306	3222			
205-	CSHFAR	3314	3301	3217	3421	3414	3318			
206-	CSHFAR	3315	3301	3315	3413	3414	3314			
207-	CSHFAR	3316	3301	3300	3400	3410	3310			
208-	CSHFAR	3317	3301	3300	3405	3406	3306			
209-	CSHFAR	3318	3301	3400	3401	3402	3406			
210-	CSHFAR	3319	3301	3400	3401	3402	3422			
211-	CSHFAR	3320	3301	3421	3421	3422	3414			
212-	CSHFAR	3321	3301	3417	3417	3418	3414			
213-	CSHFAR	3322	3301	3413	3413	3414	3414			
214-	CSHFAR	3323	3301	3413	3413	3414	3414			
215-	CSHFAR	3324	3301	3413	3413	3414	3414			
216-	CSHFAR	3325	3301	3413	3413	3414	3414			
217-	CSHFAR	3326	3301	3413	3413	3414	3414			
218-	CSHFAR	3327	3301	3413	3413	3414	3414			
219-	CSHFAR	3328	3301	3413	3413	3414	3414			
220-	CSHFAR	3329	3301	3413	3413	3414	3414			
221-	CSHFAR	3330	3301	3413	3413	3414	3414			
222-	CSHFAR	3331	3301	3413	3413	3414	3414			
223-	CSHFAR	3332	3301	3413	3413	3414	3414			
224-	CSHFAR	3333	3301	3413	3413	3414	3414			
225-	CSHFAR	3334	3301	3413	3413	3414	3414			
226-	CSHFAR	3335	3301	3413	3413	3414	3414			
227-	CSHFAR	3336	3301	3413	3413	3414	3414			
228-	CSHFAR	3337	3301	3413	3413	3414	3414			
229-	CSHFAR	3338	3301	3413	3413	3414	3414			
230-	CSHFAR	3339	3301	3413	3413	3414	3414			
231-	CSHFAR	3340	3301	3413	3413	3414	3414			
232-	CSHFAR	3341	3301	3413	3413	3414	3414			
233-	CSHFAR	3342	3301	3413	3413	3414	3414			
234-	CSHFAR	3343	3301	3413	3413	3414	3414			
235-	CSHFAR	3344	3301	3413	3413	3414	3414			
236-	CSHFAR	3345	3301	3413	3413	3414	3414			
237-	CSHFAR	3346	3301	3413	3413	3414	3414			
238-	CSHFAR	3347	3301	3413	3413	3414	3414			
239-	CSHFAR	3348	3301	3413	3413	3414	3414			
240-	CSHFAR	3349	3301	3413	3413	3414	3414			
241-	CSHFAR	3350	3301	3413	3413	3414	3414			
242-	CSHFAR	3351	3301	3413	3413	3414	3414			
243-	CSHFAR	3352	3301	3413	3413	3414	3414			
244-	CSHFAR	3353	3301	3413	3413	3414	3414			
245-	CSHFAR	3354	3301	3413	3413	3414	3414			
246-	CSHFAR	3355	3301	3413	3413	3414	3414			
247-	CSHFAR	3356	3301	3413	3413	3414	3414			
248-	CSHFAR	3357	3301	3413	3413	3414	3414			
249-	CSHFAR	3358	3301	3413	3413	3414	3414			
250-	CSHFAR	3359	3301	3413	3413	3414	3414			

1-3 8E162

9/10/74 SCOVERS 88 PERCENT EFF.4

CARD	1	2	3	4	5	6	7	8	9	10
261-	GR10	3113	153.375	153.375	-54.046751.5					
262-	GR10	3114	153.375	153.375	-54.046751.5					
263-	GR10	3117	162.0	162.0	-54.046751.5					
264-	GR10	3118	162.0	162.0	-54.046751.5					
265-	GR10	3121	170.75	170.75	-54.046751.5					
266-	GR10	3122	170.75	170.75	-54.046751.5					
267-	GR10	3123	162.0	162.0	-54.046751.5					
268-	GR10	3124	162.0	162.0	-54.046751.5					
269-	GR10	3125	162.0	162.0	-54.046751.5					
270-	GR10	3126	162.0	162.0	-54.046751.5					
271-	GR10	3127	162.0	162.0	-54.046751.5					
272-	GR10	3128	162.0	162.0	-54.046751.5					
273-	GR10	3129	162.0	162.0	-54.046751.5					
274-	GR10	3130	162.0	162.0	-54.046751.5					
275-	GR10	3131	162.0	162.0	-54.046751.5					
276-	GR10	3132	162.0	162.0	-54.046751.5					
277-	GR10	3133	162.0	162.0	-54.046751.5					
278-	GR10	3134	162.0	162.0	-54.046751.5					
279-	GR10	3135	162.0	162.0	-54.046751.5					
280-	GR10	3136	162.0	162.0	-54.046751.5					
281-	GR10	3137	162.0	162.0	-54.046751.5					
282-	GR10	3138	162.0	162.0	-54.046751.5					
283-	GR10	3139	162.0	162.0	-54.046751.5					
284-	GR10	3140	162.0	162.0	-54.046751.5					
285-	GR10	3141	162.0	162.0	-54.046751.5					
286-	GR10	3142	162.0	162.0	-54.046751.5					
287-	GR10	3143	162.0	162.0	-54.046751.5					
288-	GR10	3144	162.0	162.0	-54.046751.5					
289-	GR10	3145	162.0	162.0	-54.046751.5					
290-	GR10	3146	162.0	162.0	-54.046751.5					
291-	GR10	3147	162.0	162.0	-54.046751.5					
292-	GR10	3148	162.0	162.0	-54.046751.5					
293-	GR10	3149	162.0	162.0	-54.046751.5					
294-	GR10	3150	162.0	162.0	-54.046751.5					
295-	GR10	3151	162.0	162.0	-54.046751.5					
296-	GR10	3152	162.0	162.0	-54.046751.5					
297-	GR10	3153	162.0	162.0	-54.046751.5					
298-	GR10	3154	162.0	162.0	-54.046751.5					
299-	GR10	3155	162.0	162.0	-54.046751.5					
300-	GR10	3156	162.0	162.0	-54.046751.5					

9/10/74 SCOWERS AS PERCENT FFF.H

CARD COUNT	1	2	3	4	5	6	7	8	9	10
301-	GR10	3571	170.75	17.425	51.5					
302-	GR10	3572	170.75	17.425	45.7689					
303-	GR10	3574	0	165.25	17.425	45.7689	3000	456		
304-	GR10	3601		125.5	13.75	51.5				
305-	GR10	3602		125.5	13.75	45.5				
306-	GR10	3605		130.0	13.75	51.5				
307-	GR10	3606		130.0	13.75	45.5				
308-	GR10	3600		166.75	13.75	51.5				
309-	GR10	3610		166.75	13.75	45.5				
310-	GR10	3613		165.275	13.75	51.5				
311-	GR10	3614		163.375	13.75	45.5				
312-	GR10	3617		162.0	13.75	51.5				
313-	GR10	3619		162.0	13.75	45.5				
314-	GR10	3610		170.75	13.75	51.5				
315-	GR10	3621		170.75	13.75	45.5				
316-	GR10	3622		163.25	12.5	51.5	3002	456		
317-	GR10	3626		125.5	12.5	51.5				
318-	GR10	3621		145.0	12.5	45.5				
319-	GR10	3622		145.0	12.5	51.5				
320-	GR10	3625		164.75	12.5	45.5				
321-	GR10	3629		164.75	12.5	51.5				
322-	GR10	3627		163.375	12.5	45.5				
323-	GR10	3627		162.0	12.5	51.5				
324-	GR10	3627		162.0	12.5	45.5				
325-	GR10	3627		170.75	12.5	51.5				
326-	GR10	3671		10.566	3.1	51.5				
327-	GR10	3671		6.9266	3.1	0.0				
328-	GR10	3100		10.566	3.1	0.0				
329-	GR10	3101		17.8766	3.1	0.0				
330-	GR10	3600		20.4266	3.1	0.0				
331-	GR10	3601		21.016	3.1	0.0				
332-	GR10	3632		22.0566	3.1	0.0				
333-	GR10	3634		12.6166	3.1	0.0				
334-	GR10	3729		21.016	3.1	0.0				
335-	GR10	3721		35.67	1.0	15.17	1	-5	EMC3567X	
336-	GR10	3000		35.67	1.0	15.17	1	-5	EMC3571X	
337-	GR10	3000		35.67	1.0	15.17	1	-5	EMC3571X	
338-	GR10	3000		35.67	1.0	15.17	1	-5	EMC3571X	
339-	GR10	3000		35.67	1.0	15.17	1	-5	EMC3571X	
340-	GR10	3000		35.67	1.0	15.17	1	-5	EMC3571X	
341-	GR10	3000		35.67	1.0	15.17	1	-5	EMC3571X	
342-	GR10	3000		35.67	1.0	15.17	1	-5	EMC3571X	
343-	GR10	3000		35.67	1.0	15.17	1	-5	EMC3571X	
344-	GR10	3000		35.67	1.0	15.17	1	-5	EMC3571X	
345-	GR10	3000		35.67	1.0	15.17	1	-5	EMC3571X	
346-	GR10	3000		35.67	1.0	15.17	1	-5	EMC3571X	
347-	GR10	3000		35.67	1.0	15.17	1	-5	EMC3571X	
348-	GR10	3000		35.67	1.0	15.17	1	-5	EMC3571X	
349-	GR10	3000		35.67	1.0	15.17	1	-5	EMC3571X	
350-	GR10	3000		35.67	1.0	15.17	1	-5	EMC3571X	

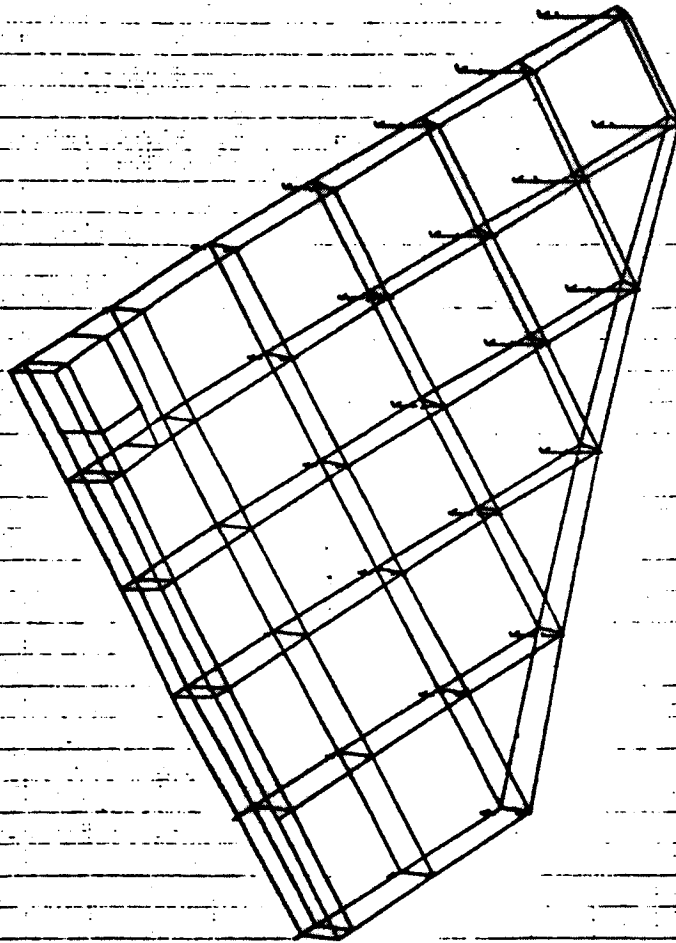
9/10/74 XCOVERS AS PERCENT EFF.0

CARD		SORTED BULK DATA ECHO									
1	2	3	4	5	6	7	8	9	10		
351-	00111	3505	3500	3509	3510	3501	3502				
352-	00111	3513	3514	3517	3518	3521	3522				
353-	00111	3526	3574	3572							
354-	PARAM	0									
355-	PARAM	GRDENT									
356-	PARAM	TPNAME									
357-	PARAM	ATNAME	002168								
358-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
359-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
360-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
361-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
362-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
363-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
364-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
365-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
366-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
367-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
368-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
369-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
370-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
371-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
372-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
373-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
374-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
375-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
376-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
377-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
378-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
379-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
380-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
381-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
382-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
383-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
384-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
385-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600
386-	00100	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600

B5-9

**Appendix B6**  
**PLOTS OF COMPONENT MODES/PHASE I ANALYSIS**  
**MODEL II WING**

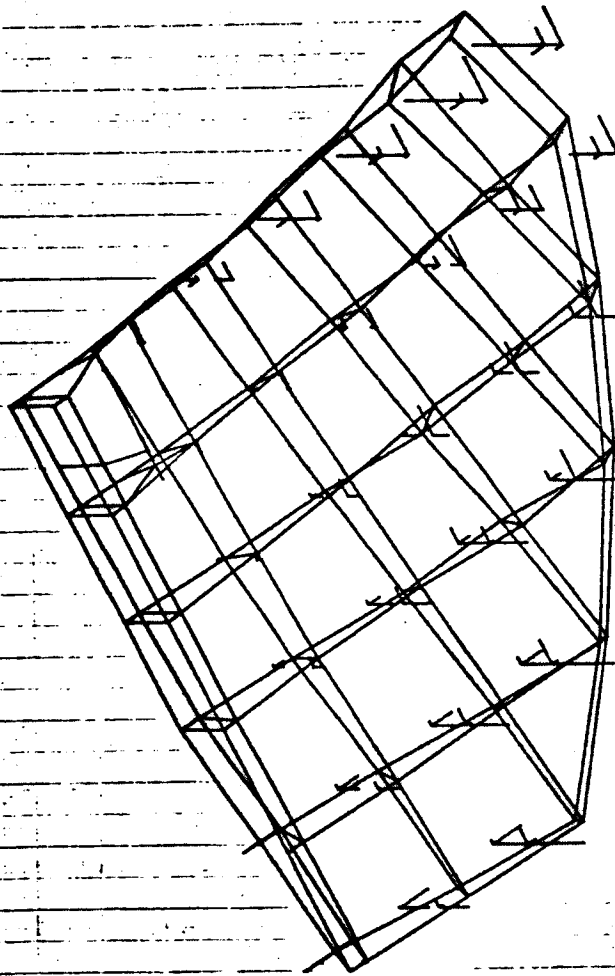
5



PHASE 1: CONSIDER THE MIND  
9/10/74 CONCLUDE ON PERCENT EFF. 1  
FREE MINDS PINE AT INTERPARE  
MODAL BOWEN. SUNDAY 1 MOON 1  
PHASE 1: 94.40000

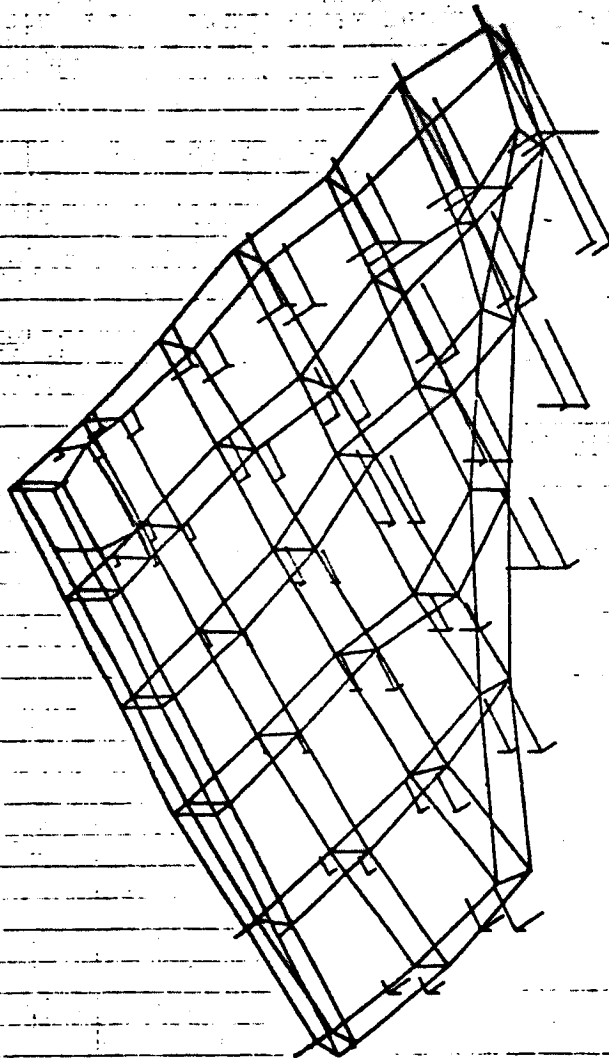


3 - 9/28/74, 0000-007, 0 1.00000000



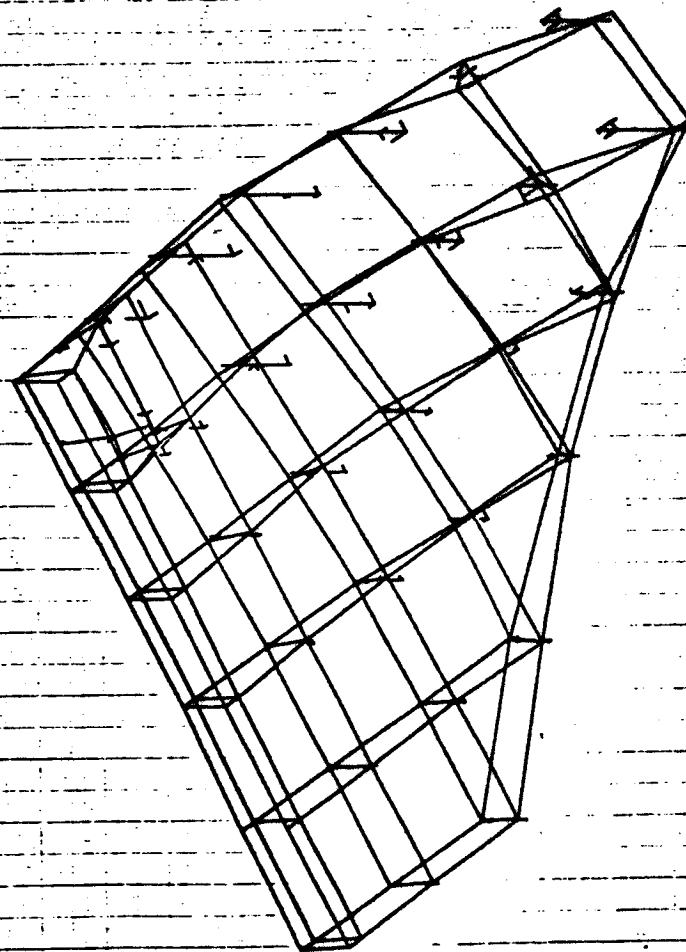
PHASE 1 (CONTINUED FROM)  
9/10/74 COVERED 80 PERCENT EFF.  
FIVE MORE PILES AT INTERFACE  
MEDAL CENTER, SUBCASE 2 MODE 2 FREQ. 148.811

9/25/74 141-057, e 1, 00000000



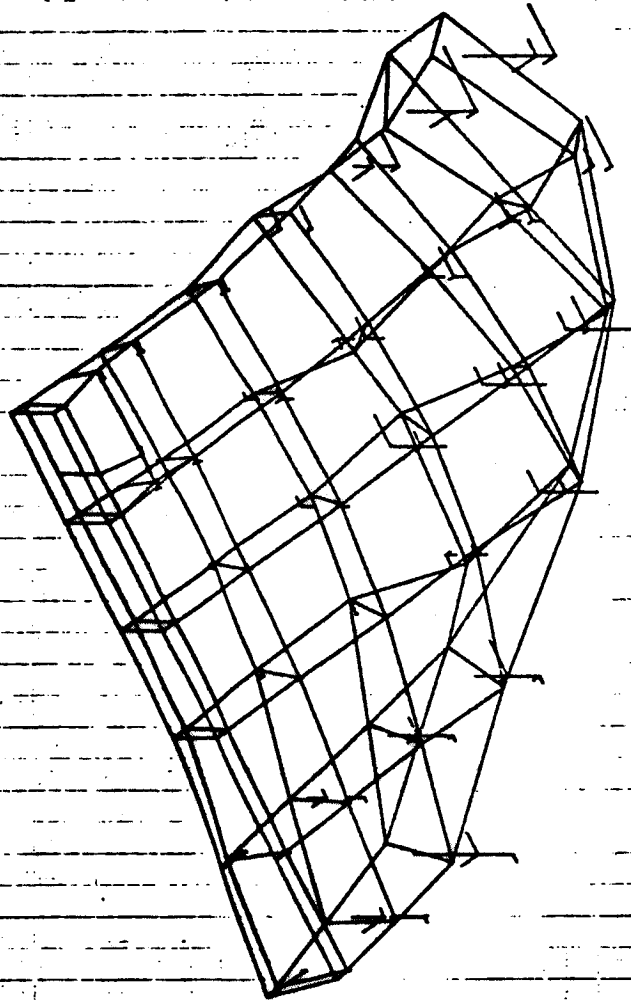
PAGE 1 CRATER WIND  
1/10/74 DESIGN AS PERCENT EFF.  
FREE MOOD PILES AT INTERFAC  
MOUL. BEYON. SURFACE 3 MOOD 3  
PRICE \$64.00/2

Q-100-74 100-007, 0 1.00000000



PHASE 1 CONSTRUCTION  
Q-100-74 SCREENS 10 PERCENT EFF.  
FIRST SCREENS FILLED AT INTERFAC  
NORMAL SCREEN, SURFACE 4 100% 2-10-00-10

0.000000 0.000000 0.000000



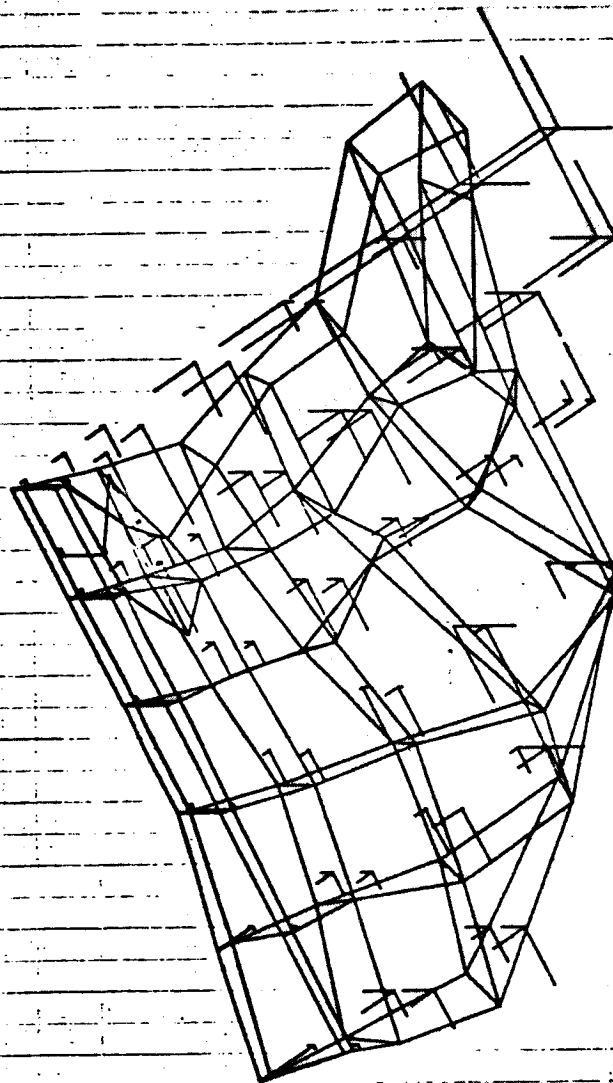
PHASE 1 CONSIDER WHEN  
5/10/74 MONITORING NO. 1000000000  
FREE MONITORING OF INTERFACE  
LOCAL MONITOR, SUBCASE 5 MONITOR 5 FREQUENCY 500.0000

A perspective drawing of a rectangular prism, tilted to show its top, front, and right side. The top and front faces are covered with a grid of lines, representing a coordinate system or a vector space. The lines on the top face are parallel to the edges of the prism, while the lines on the front face are perpendicular to the edges of the prism. This diagram illustrates the concept of a vector space, where the grid lines represent the basis vectors of the space.

PHASE 1 COMPUTER WINNER  
9/10/74 COWENS 88 PERCENT EVV.)  
FREE MILES FIRM AT INTERFACE  
MODAL DEFOR. SUBCASE 0 MADE 0

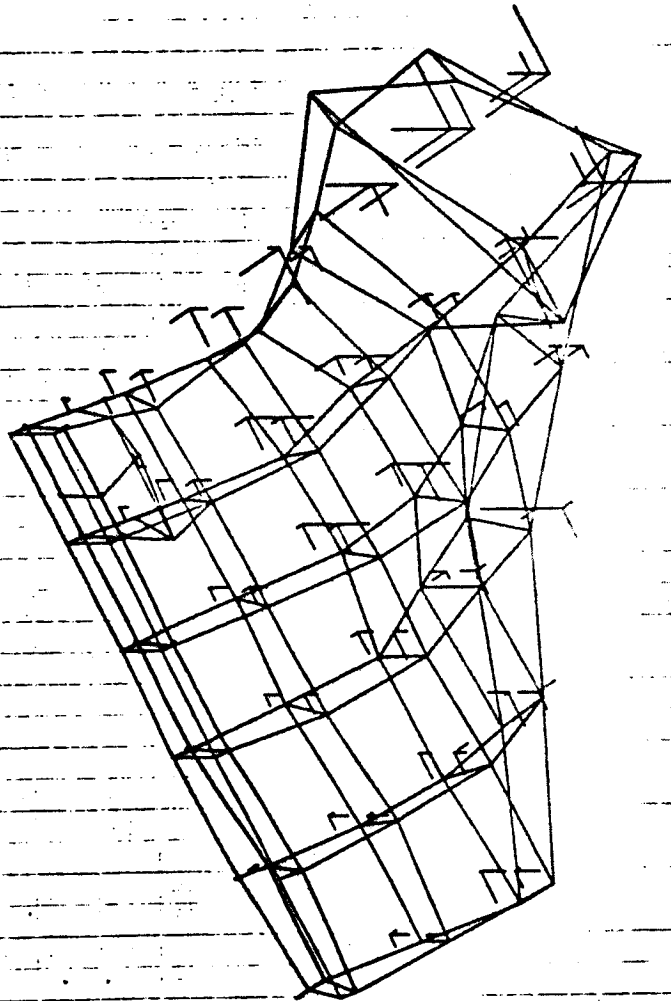


•



PAGE 8 (CONTINUED)
 9/10/74 SHOWING 88 PERCENT EFF.)
 FREE WORKS FILED AT INTERSTATE
 LABOR CENTER, CHICAGO 8
 PAGE 848.0718

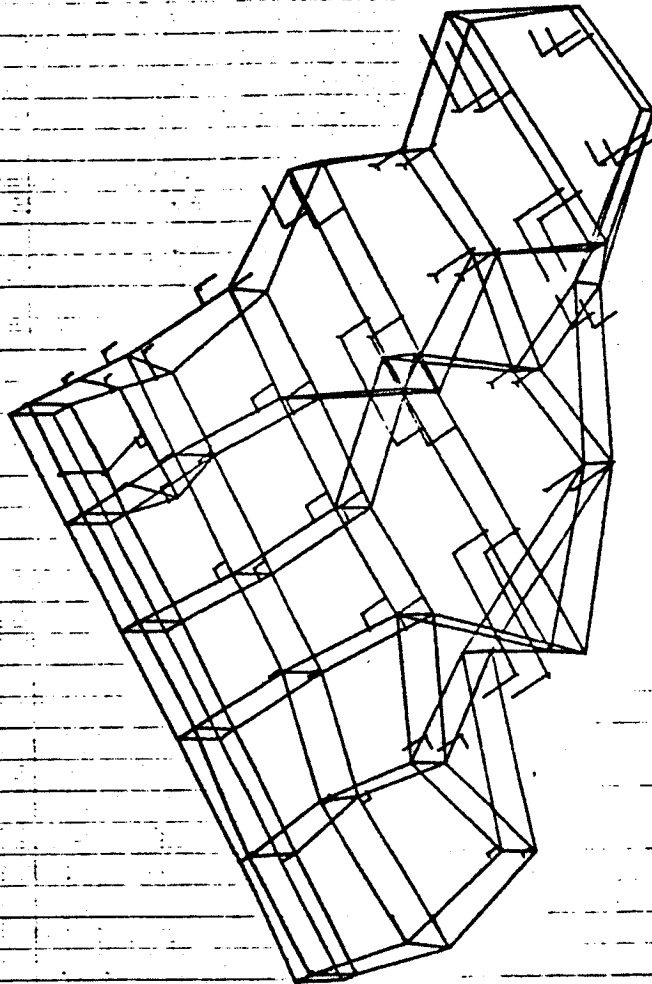
0 0.000000 0.000000 0.000000



PHASE 1 (CONVERT WIND)  
 1/10/14 (COVERS 88 PERCENT EFF.)  
 FREE MODES FIXED AT INTERFACE  
 MODAL ORDER SUBCASE 1 MODE 1 FREQ. 888.8888

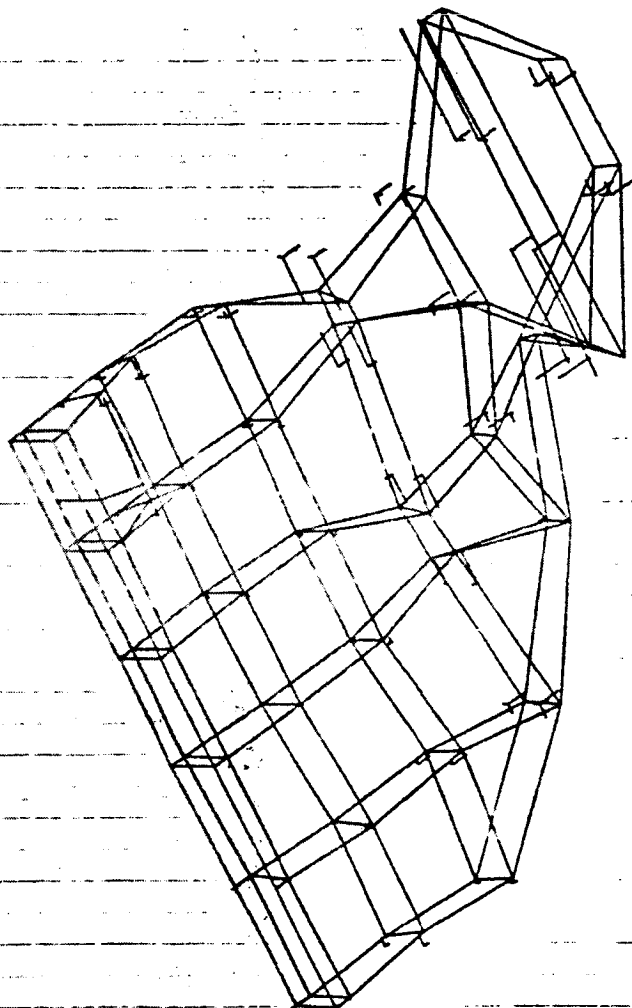


10 9/28/74 1000-007, = 2.24671200



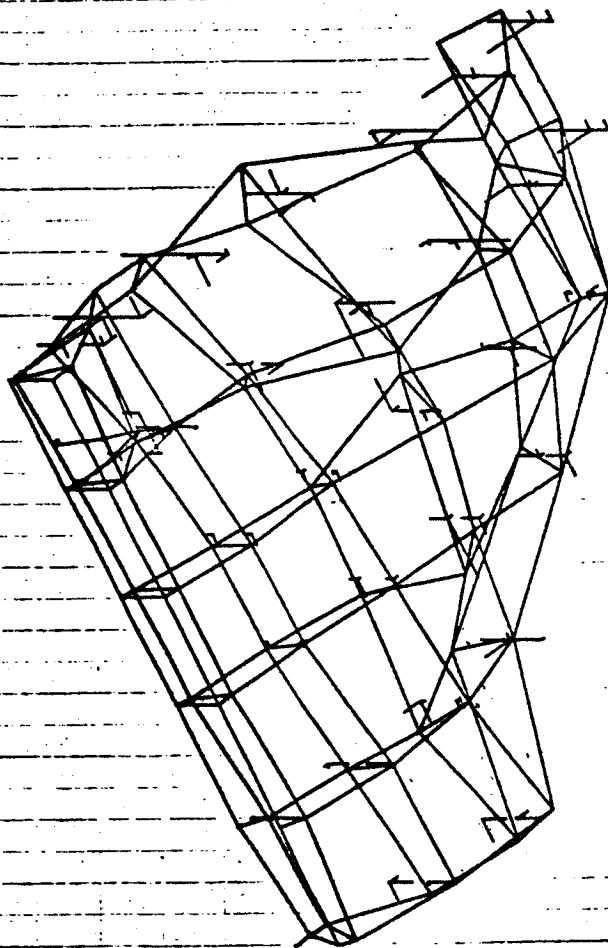
PHASE 1 CONSIDER WIND  
9/10/74 000000 98 PERCENT EFF. 1  
FREE MOVER FILMS AT INTERFACE  
LOCAL DETON. SUBCARE 10 MODE 10 FREE. 849.5782

11. 1/28/74 MAX-DEF. = 0.04000100



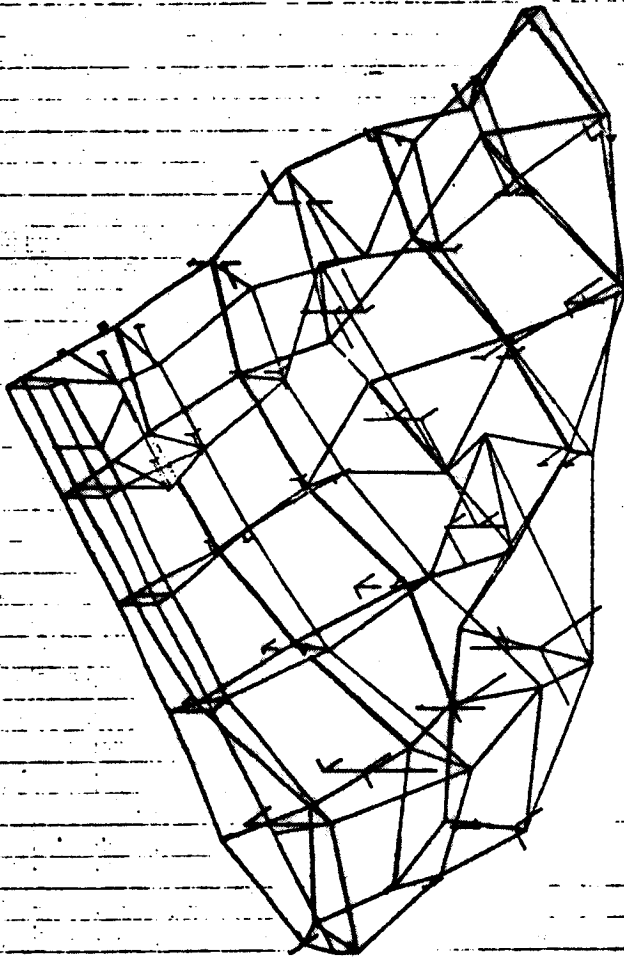
PHASE 1 CORBITER WING  
 1/10/74 (COVERS 85 PERCENT EFF.)  
 FREE MODES FIXED AT INTERFACE  
 MODAL DEFOR. SUBCASE 11 MODE 11 FREQ. 013.9238

10 1/10/74 0000-007.0 1.00000000

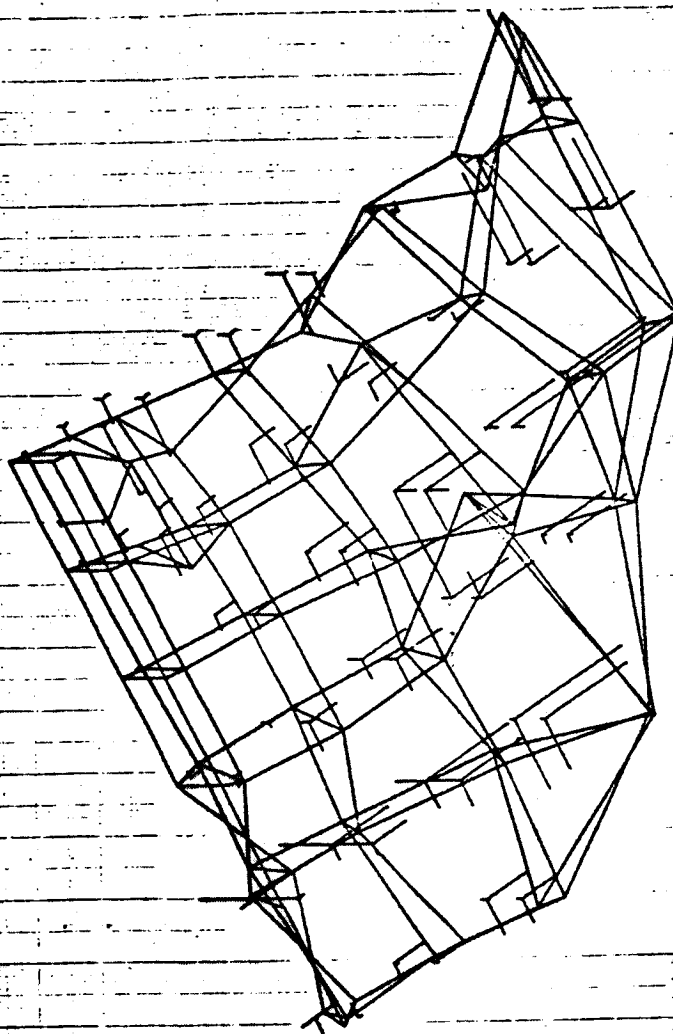


PHASE 1 (CONTINUED WIND)  
1/10/74 (COVERS 98 PERCENT EFF.)  
FREE MODES FIXED AT INTERFACE  
MODAL DETOR. BUSCASE 12 MODE 12 FREQ. 848.1488

10 000074 000007, 0 1, 00000000



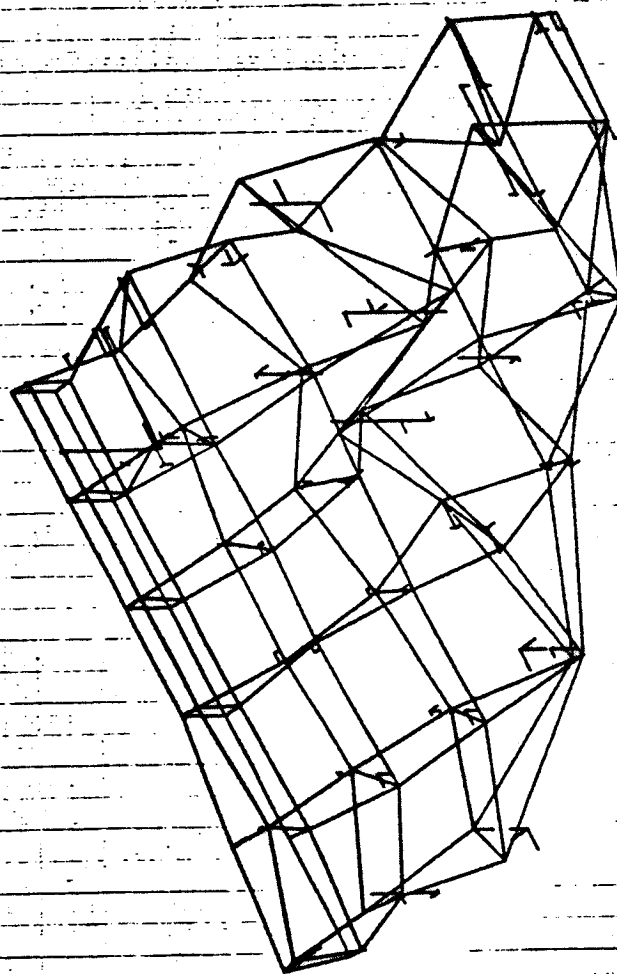
PHASE 1, ORBITER WING  
1/10/74, 000000 00 PERCENT 077.1  
FREE MOVER PILES AT INTERFACE  
MODAL DETON. SUBCASE 10 MODE 10 FREQ. 688.4784



PHASE 1 (CONTINUED FROM P. 13)  
Q/10/74 0001-007. = 1.00000000  
FREE MOVES FIXED AT INTERFACE  
MODAL DEFOR. SUBCASE 14 MODE 14 FREQ. 0.40.3248

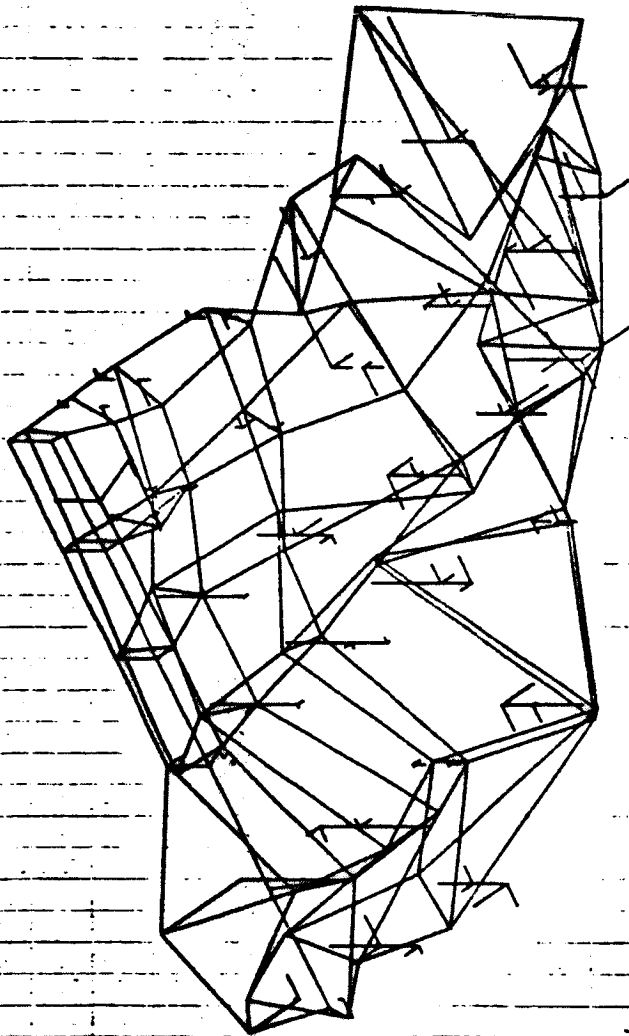


10 1/10/74 000-007, - 1.000000



PHASE 1 (CONTINUED VIEW)  
1/10/74 SHOWN ON PERSPECTIVE VIEW.  
FREE MEMES PLOTTED AT INTERFAC  
MOBAL SECTOR, SURFACE 10 MODE 10 FROM, SUB, 0004

17 0/10/74 000-007, 0 1, 00000000

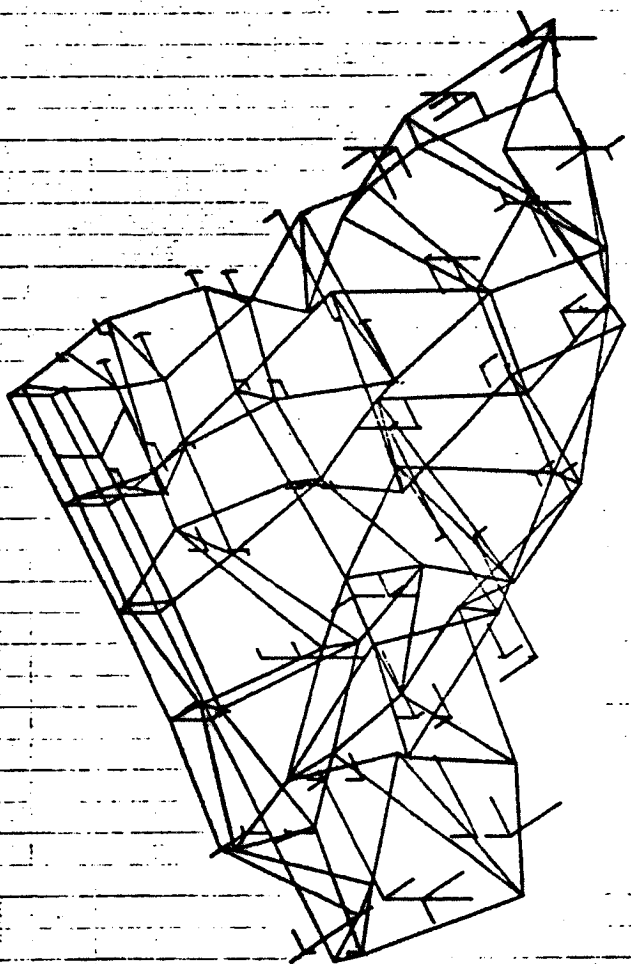


PHASE 1 (CONTINUED WIND)  
1/10/74 (COVERS 88 PERCENT EFT.)  
FREE MODES FINES AT INTERFACE  
MODAL DEFOR. SUBCASE 17 MODE 17 FREQ. 832.0144



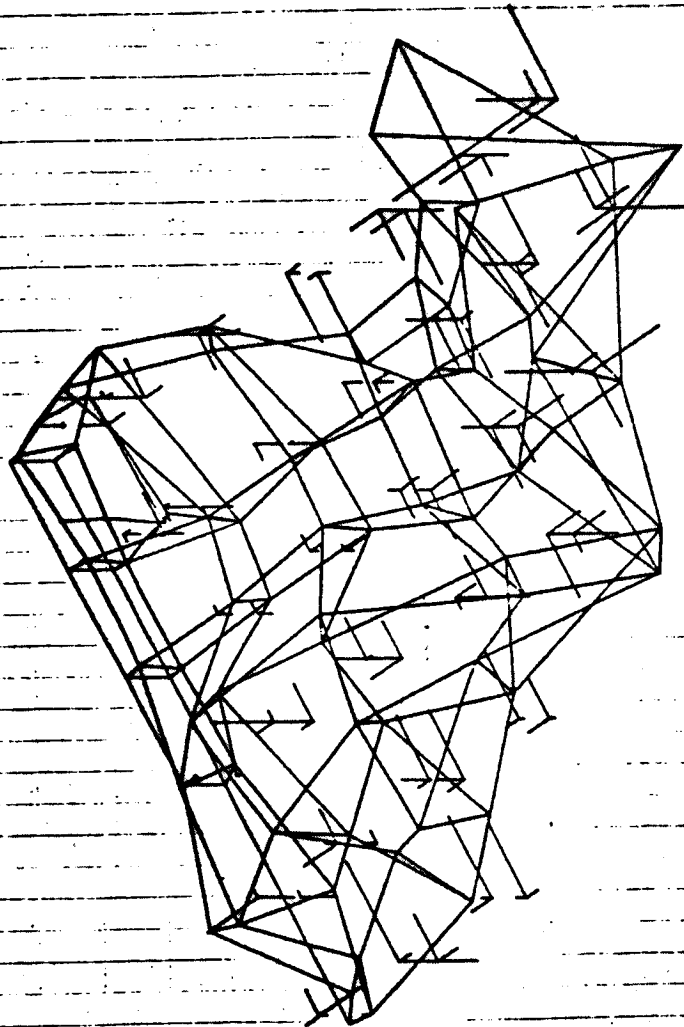


14 9/28/74 MM-007. • 1.1700100



PHASE 1 CONSIDER WING  
9/10/74 CONSIDER 95 PERCENT CTT. 1  
FREE MOSES FILLED AT INTERFACE  
MODAL DEFOS. MESSAGE 19 MODE 19 FREE. 970.0140

20 0/20/14 100-007. • 1.0000000



PHASE 1 COMBINED WITH  
 0/10/14 COMBINED 80 PERCENT CTV.1  
 FREE MESH FILLS AT INTERFACE  
 LOCAL SYSTEM. SUBJECT TO MORE 20 FREE. 400.0700

**Appendix B7**  
**INPUT BULK DATA/PHASE I ANALYSIS: MODEL II**  
**CARGO DOORS**

CASE CONTROL DECK ECHO

CARD COUNT	
1	TITLE = PHASE 1
2	SUBTITLE = ORBITER DOORS.SYM CASE(WITH STRAPS)
3	MPG = 4000
4	SPC = 4001
5	METHOD = 2
6	MAXLINES = 30000
7	OUTPUT
8	VECTOP = ALL
9	SURCASE 1
10	LABEL = FREE MODES FIXED AT INTERFACE
11	NODES = 20
12	OUTPUT(PLOT)
13	SFT 1 = GOMEN2.RAR
14	SFT 2 = INCLUDE 4201 THRU 4232
15	SFT 3 = INCLUDE 4241 THRU 4272
16	SFT 4 = INCLUDE 4301 THRU 4332.4081 THRU 4088
17	SFT 5 = INCLUDE 4301 THRU 4340
18	SFT 6 = INCLUDE 4341 THRU 4374
19	SFT 7 = INCLUDE 4374 THRU 4374
20	PLOTTER CALCOMP 765.105
21	AXES = MY,X,Z
22	VIEW = 3C,0.45,0.0
23	MAXIMUM DEFORMATION 5.0
24	FIND SCALE ORIGIN 1,SET 1
25	PLOT MODAL DEFORMATION 1 THRU 20,SET 1,SHAPE,VECTOR XYZ
26	BEGIN BULK

\*\*\* USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED, X SORT WILL RE-ORDER DECK.

SORTED BULK DATA ECHO											
CARD	1	2	3	4	5	6	7	8	9	10	
COUNT	..	..	..	..	..	..	..	..	..	..	
1- RAPOR	4381	4019	4029								
2- CBAR	4381	4019	4029								
3- CBAR	4382	4029	4049								
4- CBAR	4383	4049	4069								
5- CBAR	4384	4069	4079								
6- CBAR	4385	4079	4099								
7- CBAR	4386	4099	4119								
8- CBAR	4387	4119	4129								
9- CBAR	4388	4129	4149								
10- CBAR	4389	4149	4169								
11- CBAR	4391	4391	4391								
12- CBAR	4391	4391	4391								
13- CBAR	4391	4391	4391								
14- CBAR	4391	4391	4391								
15- CBAR	4391	4391	4391								
16- CBAR	4391	4391	4391								
17- CBAR	4391	4391	4391								
18- CBAR	4391	4391	4391								
19- CBAR	4391	4391	4391								
20- CBAR	4391	4391	4391								
21- CBAR	4391	4391	4391								
22- CBAR	4391	4391	4391								
23- CBAR	4391	4391	4391								
24- CBAR	4391	4391	4391								
25- CBAR	4391	4391	4391								
26- CBAR	4391	4391	4391								
27- CBAR	4391	4391	4391								
28- CBAR	4391	4391	4391								
29- CBAR	4391	4391	4391								
30- CBAR	4391	4391	4391								
31- CBAR	4391	4391	4391								
32- CBAR	4391	4391	4391								
33- CBAR	4391	4391	4391								
34- CBAR	4391	4391	4391								
35- CBAR	4391	4391	4391								
36- CBAR	4391	4391	4391								
37- CBAR	4391	4391	4391								
38- CBAR	4391	4391	4391								
39- CBAR	4391	4391	4391								
40- CBAR	4391	4391	4391								
41- CBAR	4391	4391	4391								
42- CBAR	4391	4391	4391								
43- CBAR	4391	4391	4391								
44- CBAR	4391	4391	4391								
45- CBAR	4391	4391	4391								
46- CBAR	4391	4391	4391								
47- CBAR	4391	4391	4391								
48- CBAR	4391	4391	4391								
49- CBAR	4391	4391	4391								
50- CBAR	4391	4391	4391								

CARD COUNT	1	2	3	4	5	6	7	8	9	..	10
CR00	0007	0001	0001	0025	0029	0047	0001	0035	0037		
CR00	0008	0001	0001	0026	0029	0048	0001	0037	0038		
CR00	0009	0001	0001	0027	0030	0049	0001	0038	0039		
CR00	0010	0001	0001	0028	0031	0050	0001	0039	0040		
CR00	0011	0001	0001	0029	0032	0051	0001	0040	0041		
CR00	0012	0001	0001	0030	0033	0052	0001	0041	0042		
CR00	0013	0001	0001	0031	0034	0053	0001	0042	0043		
CR00	0014	0001	0001	0032	0035	0054	0001	0043	0044		
CR00	0015	0001	0001	0033	0036	0055	0001	0044	0045		
CR00	0016	0001	0001	0034	0037	0056	0001	0045	0046		
CR00	0017	0001	0001	0035	0038	0057	0001	0046	0047		
CR00	0018	0001	0001	0036	0039	0058	0001	0047	0048		
CR00	0019	0001	0001	0037	0040	0059	0001	0048	0049		
CR00	0020	0001	0001	0038	0041	0060	0001	0049	0050		
CR00	0021	0001	0001	0039	0042	0061	0001	0050	0051		
CR00	0022	0001	0001	0040	0043	0062	0001	0051	0052		
CR00	0023	0001	0001	0041	0044	0063	0001	0052	0053		
CR00	0024	0001	0001	0042	0045	0064	0001	0053	0054		
CR00	0025	0001	0001	0043	0046	0065	0001	0054	0055		
CR00	0026	0001	0001	0044	0047	0066	0001	0055	0056		
CR00	0027	0001	0001	0045	0048	0067	0001	0056	0057		
CR00	0028	0001	0001	0046	0049	0068	0001	0057	0058		
CR00	0029	0001	0001	0047	0050	0069	0001	0058	0059		
CR00	0030	0001	0001	0048	0051	0070	0001	0059	0060		
CR00	0031	0001	0001	0049	0052	0071	0001	0060	0061		
CR00	0032	0001	0001	0050	0053	0072	0001	0061	0062		
CR00	0033	0001	0001	0051	0054	0073	0001	0062	0063		
CR00	0034	0001	0001	0052	0055	0074	0001	0063	0064		
CR00	0035	0001	0001	0053	0056	0075	0001	0064	0065		
CR00	0036	0001	0001	0054	0057	0076	0001	0065	0066		
CR00	0037	0001	0001	0055	0058	0077	0001	0066	0067		
CR00	0038	0001	0001	0056	0059	0078	0001	0067	0068		
CR00	0039	0001	0001	0057	0060	0079	0001	0068	0069		
CR00	0040	0001	0001	0058	0061	0080	0001	0069	0070		
CR00	0041	0001	0001	0059	0062	0081	0001	0070	0071		
CR00	0042	0001	0001	0060	0063	0082	0001	0071	0072		
CR00	0043	0001	0001	0061	0064	0083	0001	0072	0073		
CR00	0044	0001	0001	0062	0065	0084	0001	0073	0074		
CR00	0045	0001	0001	0063	0066	0085	0001	0074	0075		
CR00	0046	0001	0001	0064	0067	0086	0001	0075	0076		
CR00	0047	0001	0001	0065	0068	0087	0001	0076	0077		
CR00	0048	0001	0001	0066	0069	0088	0001	0077	0078		
CR00	0049	0001	0001	0067	0070	0089	0001	0078	0079		
CR00	0050	0001	0001	0068	0071	0090	0001	0079	0080		
CR00	0051	0001	0001	0069	0072	0091	0001	0080	0081		
CR00	0052	0001	0001	0070	0073	0092	0001	0081	0082		
CR00	0053	0001	0001	0071	0074	0093	0001	0082	0083		
CR00	0054	0001	0001	0072	0075	0094	0001	0083	0084		
CR00	0055	0001	0001	0073	0076	0095	0001	0084	0085		
CR00	0056	0001	0001	0074	0077	0096	0001	0085	0086		
CR00	0057	0001	0001	0075	0078	0097	0001	0086	0087		
CR00	0058	0001	0001	0076	0079	0098	0001	0087	0088		
CR00	0059	0001	0001	0077	0080	0099	0001	0088	0089		
CR00	0060	0001	0001	0078	0081	0100	0001	0089	0090		
CR00	0061	0001	0001	0079	0082	0101	0001	0090	0091		
CR00	0062	0001	0001	0080	0083	0102	0001	0091	0092		
CR00	0063	0001	0001	0081	0084	0103	0001	0092	0093		
CR00	0064	0001	0001	0082	0085	0104	0001	0093	0094		
CR00	0065	0001	0001	0083	0086	0105	0001	0094	0095		
CR00	0066	0001	0001	0084	0087	0106	0001	0095	0096		
CR00	0067	0001	0001	0085	0088	0107	0001	0096	0097		
CR00	0068	0001	0001	0086	0089	0108	0001	0097	0098		
CR00	0069	0001	0001	0087	0090	0109	0001	0098	0099		
CR00	0070	0001	0001	0088	0091	0110	0001	0099	0100		
CR00	0071	0001	0001	0089	0092	0111	0001	0100	0101		
CR00	0072	0001	0001	0090	0093	0112	0001	0101	0102		
CR00	0073	0001	0001	0091	0094	0113	0001	0102	0103		
CR00	0074	0001	0001	0092	0095	0114	0001	0103	0104		
CR00	0075	0001	0001	0093	0096	0115	0001	0104	0105		
CR00	0076	0001	0001	0094	0097	0116	0001	0105	0106		
CR00	0077	0001	0001	0095	0098	0117	0001	0106	0107		
CR00	0078	0001	0001	0096	0099	0118	0001	0107	0108		
CR00	0079	0001	0001	0097	0100	0119	0001	0108	0109		
CR00	0080	0001	0001	0098	0101	0120	0001	0109	0110		
CR00	0081	0001	0001	0099	0102	0121	0001	0110	0111		
CR00	0082	0001	0001	0100	0103	0122	0001	0111	0112		
CR00	0083	0001	0001	0101	0104	0123	0001	0112	0113		
CR00	0084	0001	0001	0102	0105	0124	0001	0113	0114		
CR00	0085	0001	0001	0103	0106	0125	0001	0114	0115		
CR00	0086	0001	0001	0104	0107	0126	0001	0115	0116		
CR00	0087	0001	0001	0105	0108	0127	0001	0116	0117		
CR00	0088	0001	0001	0106	0109	0128	0001	0117	0118		
CR00	0089	0001	0001	0107	0110	0129	0001	0118	0119		
CR00	0090	0001	0001	0108	0111	0130	0001	0119	0120		
CR00	0091	0001	0001	0109	0112	0131	0001	0120	0121		
CR00	0092	0001	0001	0110	0113	0132	0001	0121	0122		
CR00	0093	0001	0001	0111	0114	0133	0001	0122	0123		
CR00	0094	0001	0001	0112	0115	0134	0001	0123	0124		
CR00	0095	0001	0001	0113	0116	0135	0001	0124	0125		
CR00	0096	0001	0001	0114	0117	0136	0001	0125	0126		
CR00	0097	0001	0001	0115	0118	0137	0001	0126	0127		
CR00	0098	0001	0001	0116	0119	0138	0001	0127	0128		
CR00	0099	0001	0001	0117	0120	0139	0001	0128	0129		
CR00	0100	0001	0001	0118	0121	0140	0001	0129	0130		

CARD COUNT	1	2	3	4	5	6	7	8	9	10
101-	CRDD	4305	4301	4009	4010	4345	4301	4019	4020	
102-	CRDD	4306	4302	4021	4022	4346	4301	4031	4022	
103-	CRDD	4307	4302	4023	4024	4347	4302	4033	4024	
104-	CRDD	4308	4302	4025	4026	4348	4302	4035	4026	
105-	CRDD	4309	4302	4027	4028	4349	4302	4037	4028	
106-	CRDD	4310	4303	4029	4030	4350	4301	4051	4042	
107-	CRDD	4311	4303	4041	4042	4351	4302	4053	4044	
108-	CRDD	4312	4303	4043	4044	4352	4302	4055	4046	
109-	CRDD	4313	4303	4045	4046	4353	4302	4057	4048	
110-	CRDD	4314	4302	4047	4048					
111-	CRDD	4315	4302	4049	4050	4354	4301	4081	4072	
112-	CRDD	4316	4302	4051	4052	4355	4302	4083	4074	
113-	CRDD	4317	4302	4053	4054	4356	4302	4085	4076	
114-	CRDD	4318	4302	4055	4056	4357	4302	4087	4078	
115-	CRDD	4319	4302	4057	4058					
116-	CRDD	4320	4302	4059	4060	4358	4301	4101	4092	
117-	CRDD	4321	4302	4061	4062	4359	4302	4103	4094	
118-	CRDD	4322	4302	4063	4064	4360	4302	4105	4096	
119-	CRDD	4323	4302	4065	4066	4361	4302	4107	4098	
120-	CRDD	4324	4302	4067	4068					
121-	CRDD	4325	4302	4069	4100	4362	4301	4131	4122	
122-	CRDD	4326	4302	4121	4122	4363	4302	4133	4124	
123-	CRDD	4327	4302	4123	4124	4364	4302	4135	4126	
124-	CRDD	4328	4302	4125	4126	4365	4302	4137	4128	
125-	CRDD	4329	4302	4127	4128					
126-	CRDD	4330	4302	4129	4130	4366	4301	4151	4142	
127-	CRDD	4331	4302	4131	4132	4367	4302	4153	4144	
128-	CRDD	4332	4302	4133	4134	4368	4302	4155	4146	
129-	CRDD	4333	4302	4135	4136	4369	4302	4157	4148	
130-	CRDD	4334	4302	4137	4138					
131-	CRDD	4335	4302	4139	4140	4370	4301	4171	4172	
132-	CRDD	4336	4302	4141	4142	4371	4302	4173	4174	
133-	CRDD	4337	4302	4143	4144	4372	4302	4175	4176	
134-	CRDD	4338	4302	4145	4146	4373	4302	4177	4178	
135-	CRDD	4339	4302	4147	4148	4374	4301	4179	4180	
136-	CRDD	4340	4301	4149	4150	4375	4302			
137-	CSHEAR	4201	4201	4003	4005	4376	4302			
138-	CSHEAR	4202	4201	4005	4007	4377	4302			
139-	CSHEAR	4203	4201	4007	4009	4378	4302			
140-	CSHEAR	4204	4201	4009	4010	4379	4302			
141-	CSHEAR	4205	4201	4011	4013	4380	4302			
142-	CSHEAR	4206	4201	4013	4015	4381	4302			
143-	CSHEAR	4207	4201	4015	4017	4382	4302			
144-	CSHEAR	4208	4201	4017	4019	4383	4302			
145-	CSHEAR	4209	4201	4019	4021	4384	4302			
146-	CSHEAR	4210	4201	4021	4023	4385	4302			
147-	CSHEAR	4211	4201	4023	4025	4386	4302			
148-	CSHEAR	4212	4201	4025	4027	4387	4302			
149-	CSHEAR	4213	4201	4027	4029	4388	4302			
150-	CSHEAR	4214	4201	4029	4031	4389	4302			
151-	CSHEAR	4215	4201	4031	4033	4390	4302			



PHASE 1  
ORBITER 30388.5VM CASE (WITH STRAPS)

CARD COUNT	1	2	3	4	5	6	7	8	9	10
151-	CSHEAR	4215	4201	4075	4077	4078	4076			
152-	CSHEAR	4216	4201	4077	4079	4080	4078			
153-	CSHEAR	4217	4201	4091	4093	4094	4092			
154-	CSHEAR	4218	4201	4095	4095	4096	4094			
155-	CSHEAR	4219	4201	4097	4097	4098	4096			
156-	CSHEAR	4220	4201	4121	4123	4124	4122			
157-	CSHEAR	4221	4201	4123	4125	4126	4124			
158-	CSHEAR	4222	4201	4125	4127	4128	4126			
159-	CSHEAR	4223	4201	4127	4129	4130	4128			
160-	CSHEAR	4224	4201	4141	4143	4144	4142			
161-	CSHEAR	4225	4201	4143	4145	4146	4144			
162-	CSHEAR	4226	4201	4145	4147	4148	4146			
163-	CSHEAR	4227	4201	4147	4149	4150	4148			
164-	CSHEAR	4228	4201	4161	4163	4164	4162			
165-	CSHEAR	4229	4201	4163	4165	4166	4164			
166-	CSHEAR	4230	4201	4165	4167	4168	4166			
167-	CSHEAR	4231	4201	4167	4169	4170	4168			
168-	CSHEAR	4232	4201	4013	4015	4016	4014			
169-	CSHEAR	4233	4201	4015	4017	4018	4016			
170-	CSHEAR	4234	4201	4017	4019	4020	4018			
171-	CSHEAR	4235	4201	4031	4033	4034	4032			
172-	CSHEAR	4236	4201	4033	4035	4036	4034			
173-	CSHEAR	4237	4201	4035	4037	4038	4036			
174-	CSHEAR	4238	4201	4037	4039	4040	4038			
175-	CSHEAR	4239	4201	4039	4041	4042	4040			
176-	CSHEAR	4240	4201	4041	4043	4044	4042			
177-	CSHEAR	4241	4201	4043	4045	4046	4044			
178-	CSHEAR	4242	4201	4045	4047	4048	4046			
179-	CSHEAR	4243	4201	4047	4049	4050	4048			
180-	CSHEAR	4244	4201	4049	4051	4052	4050			
181-	CSHEAR	4245	4201	4051	4053	4054	4052			
182-	CSHEAR	4246	4201	4053	4055	4056	4054			
183-	CSHEAR	4247	4201	4055	4057	4058	4056			
184-	CSHEAR	4248	4201	4057	4059	4060	4058			
185-	CSHEAR	4249	4201	4059	4061	4062	4060			
186-	CSHEAR	4250	4201	4061	4063	4064	4062			
187-	CSHEAR	4251	4201	4063	4065	4066	4064			
188-	CSHEAR	4252	4201	4065	4067	4068	4066			
189-	CSHEAR	4253	4201	4067	4069	4070	4068			
190-	CSHEAR	4254	4201	4069	4071	4072	4070			
191-	CSHEAR	4255	4201	4071	4073	4074	4072			
192-	CSHEAR	4256	4201	4073	4075	4076	4074			
193-	CSHEAR	4257	4201	4075	4077	4078	4076			
194-	CSHEAR	4258	4201	4077	4079	4080	4078			
195-	CSHEAR	4259	4201	4079	4081	4082	4080			
196-	CSHEAR	4260	4201	4081	4083	4084	4082			
197-	CSHEAR	4261	4201	4083	4085	4086	4084			
198-	CSHEAR	4262	4201	4085	4087	4088	4086			
199-	CSHEAR	4263	4201	4087	4089	4090	4088			
200-	CSHEAR	4264	4201	4089	4091	4092	4090			
201-	CSHEAR	4265	4201	4091	4093	4094	4092			
202-	CSHEAR	4266	4201	4093	4095	4096	4094			
203-	CSHEAR	4267	4201	4095	4097	4098	4096			
204-	CSHEAR	4268	4201	4097	4099	4100	4098			
205-	CSHEAR	4269	4201	4101	4103	4104	4102			
206-	CSHEAR	4270	4201	4103	4105	4106	4104			
207-	CSHEAR	4271	4201	4105	4107	4108	4106			
208-	CSHEAR	4272	4201	4107	4109	4110	4108			
209-	CSHEAR	4273	4201	4109	4111	4112	4110			
210-	CSHEAR	4274	4201	4111	4113	4114	4112			
211-	CSHEAR	4275	4201	4113	4115	4116	4114			
212-	CSHEAR	4276	4201	4115	4117	4118	4116			
213-	CSHEAR	4277	4201	4117	4119	4120	4118			
214-	CSHEAR	4278	4201	4119	4121	4122	4120			
215-	CSHEAR	4279	4201	4121	4123	4124	4122			
216-	CSHEAR	4280	4201	4123	4125	4126	4124			
217-	CSHEAR	4281	4201	4125	4127	4128	4126			
218-	CSHEAR	4282	4201	4127	4129	4130	4128			
219-	CSHEAR	4283	4201	4129	4131	4132	4130			
220-	CSHEAR	4284	4201	4131	4133	4134	4132			
221-	CSHEAR	4285	4201	4133	4135	4136	4134			
222-	CSHEAR	4286	4201	4135	4137	4138	4136			
223-	CSHEAR	4287	4201	4137	4139	4140	4138			
224-	CSHEAR	4288	4201	4139	4141	4142	4140			
225-	CSHEAR	4289	4201	4141	4143	4144	4142			
226-	CSHEAR	4290	4201	4143	4145	4146	4144			
227-	CSHEAR	4291	4201	4145	4147	4148	4146			
228-	CSHEAR	4292	4201	4147	4149	4150	4148			
229-	CSHEAR	4293	4201	4149	4151	4152	4150			
230-	CSHEAR	4294	4201	4151	4153	4154	4152			
231-	CSHEAR	4295	4201	4153	4155	4156	4154			
232-	CSHEAR	4296	4201	4155	4157	4158	4156			
233-	CSHEAR	4297	4201	4157	4159	4160	4158			
234-	CSHEAR	4298	4201	4159	4161	4162	4160			
235-	CSHEAR	4299	4201	4161	4163	4164	4162			
236-	CSHEAR	4300	4201	4163	4165	4166	4164			

SORTED BULK DATA ECHO									
CARD	1	2	3	4	5	6	7	8	9
COUNT	1	2	3	4	5	6	7	8	9
201-	1	2	3	4	5	6	7	8	9
202-	1	2	3	4	5	6	7	8	9
203-	1	2	3	4	5	6	7	8	9
204-	1	2	3	4	5	6	7	8	9
205-	1	2	3	4	5	6	7	8	9
206-	1	2	3	4	5	6	7	8	9
207-	1	2	3	4	5	6	7	8	9
208-	1	2	3	4	5	6	7	8	9
209-	1	2	3	4	5	6	7	8	9
210-	1	2	3	4	5	6	7	8	9
211-	1	2	3	4	5	6	7	8	9
212-	1	2	3	4	5	6	7	8	9
213-	1	2	3	4	5	6	7	8	9
214-	1	2	3	4	5	6	7	8	9
215-	1	2	3	4	5	6	7	8	9
216-	1	2	3	4	5	6	7	8	9
217-	1	2	3	4	5	6	7	8	9
218-	1	2	3	4	5	6	7	8	9
219-	1	2	3	4	5	6	7	8	9
220-	1	2	3	4	5	6	7	8	9
221-	1	2	3	4	5	6	7	8	9
222-	1	2	3	4	5	6	7	8	9
223-	1	2	3	4	5	6	7	8	9
224-	1	2	3	4	5	6	7	8	9
225-	1	2	3	4	5	6	7	8	9
226-	1	2	3	4	5	6	7	8	9
227-	1	2	3	4	5	6	7	8	9
228-	1	2	3	4	5	6	7	8	9
229-	1	2	3	4	5	6	7	8	9
230-	1	2	3	4	5	6	7	8	9
231-	1	2	3	4	5	6	7	8	9
232-	1	2	3	4	5	6	7	8	9
233-	1	2	3	4	5	6	7	8	9
234-	1	2	3	4	5	6	7	8	9
235-	1	2	3	4	5	6	7	8	9
236-	1	2	3	4	5	6	7	8	9
237-	1	2	3	4	5	6	7	8	9
238-	1	2	3	4	5	6	7	8	9
239-	1	2	3	4	5	6	7	8	9
240-	1	2	3	4	5	6	7	8	9
241-	1	2	3	4	5	6	7	8	9
242-	1	2	3	4	5	6	7	8	9
243-	1	2	3	4	5	6	7	8	9
244-	1	2	3	4	5	6	7	8	9
245-	1	2	3	4	5	6	7	8	9
246-	1	2	3	4	5	6	7	8	9
247-	1	2	3	4	5	6	7	8	9
248-	1	2	3	4	5	6	7	8	9
249-	1	2	3	4	5	6	7	8	9
250-	1	2	3	4	5	6	7	8	9
251-	1	2	3	4	5	6	7	8	9
252-	1	2	3	4	5	6	7	8	9

CARD	1	2	3	4	5	6	7	8	9	10
2501	GRID	4055	0	93.28	-0.8389	71.3389	0	0	0	456
2502	GRID	4057	0	91.28	-11.5485	67.2835	0	0	0	456
2503	GRID	4062	0	102.12	-12.5	63.10	0	0	0	246
2504	GRID	4064	0	102.12	-12.5	62.00	0	0	0	246
2505	GRID	4069	0	102.12	-12.5	62.81	0	0	0	456
2506	GRID	4071	0	107.92	0	75.0	0	0	0	1456
2507	GRID	4072	0	107.92	0	73.0	0	0	0	1456
2508	GRID	4073	0	107.92	-4.7835	74.0485	0	0	0	1456
2509	GRID	4074	0	107.92	-4.0181	72.2007	0	0	0	1456
2510	GRID	4075	0	107.92	-8.8389	71.3389	0	0	0	1456
2511	GRID	4076	0	107.92	-7.4247	69.5497	0	0	0	1456
2512	GRID	4077	0	107.92	-11.5485	67.2835	0	0	0	1456
2513	GRID	4078	0	107.92	-9.7007	66.5181	0	0	0	1456
2514	GRID	4079	0	107.92	-12.5	62.81	0	0	0	4
2515	GRID	4080	0	107.92	-10.5	62.5	0	0	0	1456
2516	GRID	4081	0	107.92	0	75.0	0	0	0	1456
2517	GRID	4082	0	107.92	-4.7835	74.0485	0	0	0	456
2518	GRID	4083	0	107.92	-4.0181	72.2007	0	0	0	456
2519	GRID	4084	0	107.92	-8.8389	71.3389	0	0	0	456
2520	GRID	4085	0	107.92	-7.4247	69.5497	0	0	0	456
2521	GRID	4086	0	122.56	-11.5485	67.2835	0	0	0	1456
2522	GRID	4087	0	122.56	0	75.0	0	0	0	1456
2523	GRID	4088	0	122.56	-4.7835	74.0485	0	0	0	1456
2524	GRID	4089	0	122.56	-4.0181	72.2007	0	0	0	1456
2525	GRID	4090	0	122.56	-8.8389	71.3389	0	0	0	1456
2526	GRID	4091	0	122.56	-7.4247	69.5497	0	0	0	1456
2527	GRID	4092	0	122.56	-11.5485	67.2835	0	0	0	1456
2528	GRID	4093	0	122.56	-9.7007	66.5181	0	0	0	4
2529	GRID	4094	0	122.56	-12.5	62.81	0	0	0	1456
2530	GRID	4095	0	122.56	-10.5	62.5	0	0	0	1456
2531	GRID	4096	0	122.56	0	75.0	0	0	0	456
2532	GRID	4097	0	122.56	-4.7835	74.0485	0	0	0	456
2533	GRID	4098	0	122.56	-4.0181	72.2007	0	0	0	456
2534	GRID	4099	0	122.56	-8.8389	71.3389	0	0	0	456
2535	GRID	4100	0	122.56	-7.4247	69.5497	0	0	0	456
2536	GRID	4101	0	122.56	-11.5485	67.2835	0	0	0	246
2537	GRID	4102	0	129.0	-12.5	63.10	0	0	0	456
2538	GRID	4103	0	129.0	-12.5	62.81	0	0	0	1456
2539	GRID	4104	0	129.0	0	75.0	0	0	0	1456
2540	GRID	4105	0	137.2	-4.7835	74.0485	0	0	0	1456
2541	GRID	4106	0	137.2	-4.0181	72.2007	0	0	0	1456
2542	GRID	4107	0	137.2	-8.8389	71.3389	0	0	0	1456
2543	GRID	4108	0	137.2	-7.4247	69.5497	0	0	0	1456
2544	GRID	4109	0	137.2	-11.5485	67.2835	0	0	0	1456
2545	GRID	4110	0	137.2	-9.7007	66.5181	0	0	0	4
2546	GRID	4111	0	137.2	-12.5	62.81	0	0	0	1456
2547	GRID	4112	0	137.2	-10.5	62.5	0	0	0	1456
2548	GRID	4113	0	137.2	0	75.0	0	0	0	456
2549	GRID	4114	0	137.2	-4.7835	74.0485	0	0	0	456
2550	GRID	4115	0	137.2	-4.0181	72.2007	0	0	0	456
2551	GRID	4116	0	137.2	-8.8389	71.3389	0	0	0	456
2552	GRID	4117	0	137.2	-7.4247	69.5497	0	0	0	456
2553	GRID	4118	0	137.2	-11.5485	67.2835	0	0	0	456
2554	GRID	4119	0	137.2	-9.7007	66.5181	0	0	0	456
2555	GRID	4120	0	137.2	-12.5	62.81	0	0	0	456
2556	GRID	4121	0	137.2	-10.5	62.5	0	0	0	456
2557	GRID	4122	0	137.2	0	75.0	0	0	0	456
2558	GRID	4123	0	137.2	-4.7835	74.0485	0	0	0	456
2559	GRID	4124	0	137.2	-4.0181	72.2007	0	0	0	456
2560	GRID	4125	0	137.2	-8.8389	71.3389	0	0	0	456
2561	GRID	4126	0	137.2	-7.4247	69.5497	0	0	0	456
2562	GRID	4127	0	137.2	-11.5485	67.2835	0	0	0	456
2563	GRID	4128	0	137.2	-9.7007	66.5181	0	0	0	456
2564	GRID	4129	0	137.2	-12.5	62.81	0	0	0	456
2565	GRID	4130	0	137.2	-10.5	62.5	0	0	0	456
2566	GRID	4131	0	137.2	0	75.0	0	0	0	456
2567	GRID	4132	0	137.2	-4.7835	74.0485	0	0	0	456
2568	GRID	4133	0	137.2	-4.0181	72.2007	0	0	0	456
2569	GRID	4134	0	137.2	-8.8389	71.3389	0	0	0	456
2570	GRID	4135	0	137.2	-7.4247	69.5497	0	0	0	456

SORTED BULK DATA ECHO											
CARD COUNT	1	2	3	4	5	6	7	8	9	10	
301-	GRID	4141	00	153.375	0	75.0	0	0	0	0	1456
302-	GRID	4142	00	153.375	0	73.0	0	0	0	0	1456
303-	GRID	4143	00	153.375	-4.7835	74.0495	0	0	0	0	1456
304-	GRID	4144	00	153.375	-4.0191	72.2007	0	0	0	0	1456
305-	GRID	4145	00	153.375	-4.8389	71.3349	0	0	0	0	1456
306-	GRID	4146	00	153.375	-7.4247	69.9247	0	0	0	0	1456
307-	GRID	4147	00	153.375	-11.5485	67.2835	0	0	0	0	1456
308-	GRID	4148	00	153.375	-9.7007	66.5181	0	0	0	0	1456
309-	GRID	4149	00	153.375	-12.5	62.81	0	0	0	0	1456
310-	GRID	4150	00	153.375	-10.5	62.5	0	0	0	0	1456
311-	GRID	4151	00	153.375	0	75.0	0	0	0	0	1456
312-	GRID	4152	00	153.375	-12.5	63.10	0	0	0	0	1456
313-	GRID	4153	00	153.375	-4.7835	74.0495	0	0	0	0	1456
314-	GRID	4154	00	153.375	-12.5	62.00	0	0	0	0	1456
315-	GRID	4155	00	153.375	-8.8349	71.3339	0	0	0	0	1456
316-	GRID	4156	00	153.375	-11.5485	67.2835	0	0	0	0	1456
317-	GRID	4157	00	166.5	0	75.0	0	0	0	0	1456
318-	GRID	4158	00	166.5	0	73.0	0	0	0	0	1456
319-	GRID	4159	00	166.5	-4.7835	74.0495	0	0	0	0	1456
320-	GRID	4160	00	166.5	-4.0181	72.2007	0	0	0	0	1456
321-	GRID	4161	00	166.5	-8.8349	71.3339	0	0	0	0	1456
322-	GRID	4162	00	166.5	-7.4247	69.9247	0	0	0	0	1456
323-	GRID	4163	00	166.5	-11.5485	67.2835	0	0	0	0	1456
324-	GRID	4164	00	166.5	-9.7007	66.5181	0	0	0	0	1456
325-	GRID	4165	00	166.5	-12.5	62.81	0	0	0	0	1456
326-	GRID	4166	00	166.5	-10.5	62.5	0	0	0	0	1456
327-	GRID	4167	00	166.5	0	75.0	0	0	0	0	1456
328-	GRID	4168	00	166.5	0	73.0	0	0	0	0	1456
329-	GRID	4169	00	166.5	-4.7835	74.0495	0	0	0	0	1456
330-	GRID	4170	00	166.5	-4.0181	72.2007	0	0	0	0	1456
331-	GRID	4171	00	166.5	-8.8349	71.3339	0	0	0	0	1456
332-	GRID	4172	00	166.5	-7.4247	69.9247	0	0	0	0	1456
333-	GRID	4173	00	166.5	-11.5485	67.2835	0	0	0	0	1456
334-	GRID	4174	00	166.5	-9.7007	66.5181	0	0	0	0	1456
335-	GRID	4175	00	166.5	-12.5	62.81	0	0	0	0	1456
336-	GRID	4176	00	166.5	-10.5	62.5	0	0	0	0	1456
337-	GRID	4177	00	166.5	0	75.0	0	0	0	0	1456
338-	GRID	4178	00	166.5	0	73.0	0	0	0	0	1456
339-	GRID	4179	00	166.5	-4.7835	74.0495	0	0	0	0	1456
340-	GRID	4180	00	166.5	-4.0181	72.2007	0	0	0	0	1456
341-	GRID	4181	00	166.5	-8.8349	71.3339	0	0	0	0	1456
342-	GRID	4182	00	166.5	-7.4247	69.9247	0	0	0	0	1456
343-	GRID	4183	00	166.5	-11.5485	67.2835	0	0	0	0	1456
344-	GRID	4184	00	166.5	-9.7007	66.5181	0	0	0	0	1456
345-	GRID	4185	00	166.5	-12.5	62.81	0	0	0	0	1456
346-	GRID	4186	00	166.5	-10.5	62.5	0	0	0	0	1456
347-	GRID	4187	00	166.5	0	75.0	0	0	0	0	1456
348-	GRID	4188	00	166.5	0	73.0	0	0	0	0	1456
349-	GRID	4189	00	166.5	-4.7835	74.0495	0	0	0	0	1456
350-	GRID	4190	00	166.5	-4.0181	72.2007	0	0	0	0	1456
351-	GRID	4191	00	166.5	-8.8349	71.3339	0	0	0	0	1456
352-	GRID	4192	00	166.5	-7.4247	69.9247	0	0	0	0	1456
353-	GRID	4193	00	166.5	-11.5485	67.2835	0	0	0	0	1456
354-	GRID	4194	00	166.5	-9.7007	66.5181	0	0	0	0	1456
355-	GRID	4195	00	166.5	-12.5	62.81	0	0	0	0	1456
356-	GRID	4196	00	166.5	-10.5	62.5	0	0	0	0	1456
357-	GRID	4197	00	166.5	0	75.0	0	0	0	0	1456
358-	GRID	4198	00	166.5	0	73.0	0	0	0	0	1456
359-	GRID	4199	00	166.5	-4.7835	74.0495	0	0	0	0	1456
360-	GRID	4200	00	166.5	-4.0181	72.2007	0	0	0	0	1456
361-	GRID	4201	00	166.5	-8.8349	71.3339	0	0	0	0	1456
362-	GRID	4202	00	166.5	-7.4247	69.9247	0	0	0	0	1456
363-	GRID	4203	00	166.5	-11.5485	67.2835	0	0	0	0	1456
364-	GRID	4204	00	166.5	-9.7007	66.5181	0	0	0	0	1456
365-	GRID	4205	00	166.5	-12.5	62.81	0	0	0	0	1456
366-	GRID	4206	00	166.5	-10.5	62.5	0	0	0	0	1456
367-	GRID	4207	00	166.5	0	75.0	0	0	0	0	1456
368-	GRID	4208	00	166.5	0	73.0	0	0	0	0	1456
369-	GRID	4209	00	166.5	-4.7835	74.0495	0	0	0	0	1456
370-	GRID	4210	00	166.5	-4.0181	72.2007	0	0	0	0	1456
371-	GRID	4211	00	166.5	-8.8349	71.3339	0	0	0	0	1456
372-	GRID	4212	00	166.5	-7.4247	69.9247	0	0	0	0	1456
373-	GRID	4213	00	166.5	-11.5485	67.2835	0	0	0	0	1456
374-	GRID	4214	00	166.5	-9.7007	66.5181	0	0	0	0	1456
375-	GRID	4215	00	166.5	-12.5	62.81	0	0	0	0	1456
376-	GRID	4216	00	166.5	-10.5	62.5	0	0	0	0	1456
377-	GRID	4217	00	166.5	0	75.0	0	0	0	0	1456
378-	GRID	4218	00	166.5	0	73.0	0	0	0	0	1456
379-	GRID	4219	00	166.5	-4.7835	74.0495	0	0	0	0	1456
380-	GRID	4220	00	166.5	-4.0181	72.2007	0	0	0	0	1456
381-	GRID	4221	00	166.5	-8.8349	71.3339	0	0	0	0	1456
382-	GRID	4222	00	166.5	-7.4247	69.9247	0	0	0	0	1456
383-	GRID	4223	00	166.5	-11.5485	67.2835	0	0	0	0	1456
384-	GRID	4224	00	166.5	-9.7007	66.5181	0	0	0	0	1456
385-	GRID	4225	00	166.5	-12.5	62.81	0	0	0	0	1456
386-	GRID	4226	00	166.5	-10.5	62.5	0	0	0	0	1456
387-	GRID	4227	00	166.5	0	75.0	0	0	0	0	1456
388-	GRID	4228	00	166.5	0	73.0	0	0	0	0	1456
389-	GRID	4229	00	166.5	-4.7835	74.0495	0	0	0	0	1456
390-	GRID	4230	00	166.5	-4.0181	72.2007	0	0	0	0	1456
391-	GRID	4231	00	166.5	-8.8349	71.3339	0	0	0	0	1456
392-	GRID	4232	00	166.5	-7.4247	69.9247	0	0	0	0	1456
393-	GRID	4233	00	166.5	-11.5485	67.2835	0	0	0	0	1456
394-	GRID	4234	00	166.5	-9.7007	66.5181	0	0	0	0	1456
395-	GRID	4235	00	166.5	-12.5	62.81	0	0	0	0	1456
396-	GRID	4236	00	166.5	-10.5	62.5	0	0	0	0	1456
397-	GRID	4237	00	166.5	0	75.0	0	0	0	0	1456
398-	GRID	4238	00	166.5	0	73.0	0	0	0	0	1456
399-	GRID	4239	00	166.5	-4.7835	74.0495	0	0	0	0	1456
400-	GRID	4240	00	166.5	-4.0181	72.2007	0	0	0	0	1456
401-	GRID	4241	00	166.5	-8.8349	71.3339	0	0	0	0	1456
402-	GRID	4242	00	166.5	-7.4247	69.9247	0	0	0	0	1456
403-	GRID	4243	00	166.5	-11.5485	67.2835	0	0	0	0	1456
404-	GRID	4244	00	166.5	-9.7007	66.5181	0	0	0	0	1456
405-	GRID	4245	00	166.5	-12.5	62.81	0	0	0	0	1456
406-	GRID	4246	00	166.5	-10.5	62.5	0	0	0	0	1456
407-	GRID	4247	00	166.5	0	75.0	0	0	0	0	1456
408-	GRID	4248	00	166.5	0	73.0	0	0	0	0	1456
409-	GRID	4249	00	166.5	-4.7835	74.0495	0	0	0	0	1456
410-	GRID	4250	00	166.5	-4.0181	72.2007	0	0	0	0	1456
411-	GRID	4251	00	166.5	-8.8349	71.3339	0	0	0	0	1456
412-	GRID	4252	00	166.5	-7.4247	69.9247	0	0	0	0	1456
413-	GRID	4253	00	166.5	-11.5485	67.2835	0	0	0	0	1456
414-	GRID	4254	00	166.5	-9.7007	66.5181	0	0	0	0	1456
415-	GRID	4255	00	166.5	-12.5	62.81	0	0	0	0	1456
416-	GRID	4256	00	166.5	-10.5	62.5	0	0	0	0	1456
417-	GRID	4257	00	166.5	0	75.0	0	0	0	0	1456
418-	GRID	4258	00	166.5	0	73.0	0	0	0	0	1456
419-	GRID	4259	00	166.5	-4.7835	74.0495	0	0	0	0	1456
420-	GRID	4260	00	166.5	-4.0181	72.2007	0	0	0	0	1456
421-	GRID	4261	00	166.5	-8.8349						

10

[illegible]

SORTED BULK DATA ECHO

CARD	1	2	3	4	5	6	7	8	9	10
COUNT	1	2	3	4	5	6	7	8	9	10
401-	SPC	4001	4022	4022	4042	4051				
402-	SPC	4001	4041	4041	4081	4081				
403-	SPC	4001	4071	4071	4092	4092				
404-	SPC	4001	4072	4072	4101	4101				
405-	SPC	4001	4091	4091	4131	4131				
406-	SPC	4001	4121	4121	4142	4142				
407-	SPC	4001	4122	4122	4151	4151				
408-	SPC	4001	4141	4141	4162	4162				
409-	SPC	4001	4171	4171	4001	4001				
410-	SPC	4002	4001	4001	4172	4172				
411-	SPC	4002	4002	4011	4021	4021				
412-	SPC	4002	4002	4021	4042	4042				
413-	SPC	4002	4002	4022	4031	4031				
414-	SPC	4002	4002	4031	4051	4051				
415-	SPC	4002	4002	4041	4071	4071				
416-	SPC	4002	4002	4051	4092	4092				
417-	SPC	4002	4002	4071	4092	4092				
418-	SPC	4002	4002	4072	4092	4092				
419-	SPC	4002	4002	4091	4092	4092				
420-	SPC	4002	4002	4091	4092	4092				
421-	SPC	4002	4002	4091	4092	4092				
422-	SPC	4002	4002	4101	4101	4101				
423-	SPC	4002	4002	4101	4121	4121				
424-	SPC	4002	4002	4122	4142	4142				
425-	SPC	4002	4002	4131	4141	4141				
426-	SPC	4002	4002	4141	4151	4151				
427-	SPC	4002	4002	4151	4162	4162				
428-	SPC	4002	4002	4161	4171	4171				
429-	SPC	4002	4002	4171	4171	4171				
430-	SPC	4002	4002	4171	4171	4171				
431-	SUPORT	4004	4172	4172	4008	4008	4010	4010	4010	4010
432-	SUPORT	4034	4084	4084	4114	4114	4154	4154	4154	4154
433-	SUPORT	4174	4176	4176	4176	4176	4180	4180	4180	4180
	END DATA									

**Appendix B8**  
**PLOTS OF SYMMETRIC COMPONENT MODES/PHASE I**  
**ANALYSIS MODEL II CARGO DOORS**





CONSISTEN BONES. THIS CASE WITH STAPES

FROM: SAC, NEW YORK (100-101001)  
TO: DIRECTOR, FBI (100-33360)  
SUBJECT: MURDER OF MARTIN LUTHER KING, JR.;  
RE: NEW YORK TELETYPE TO BUREAU, APRIL 4, 1968.

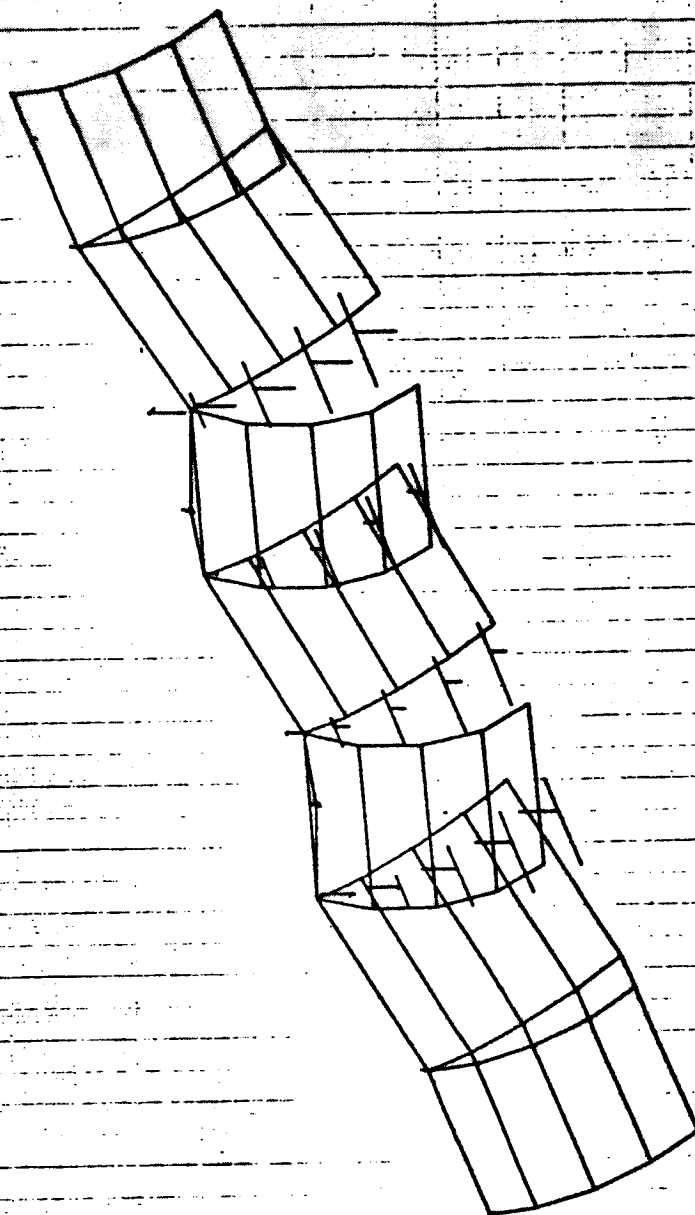
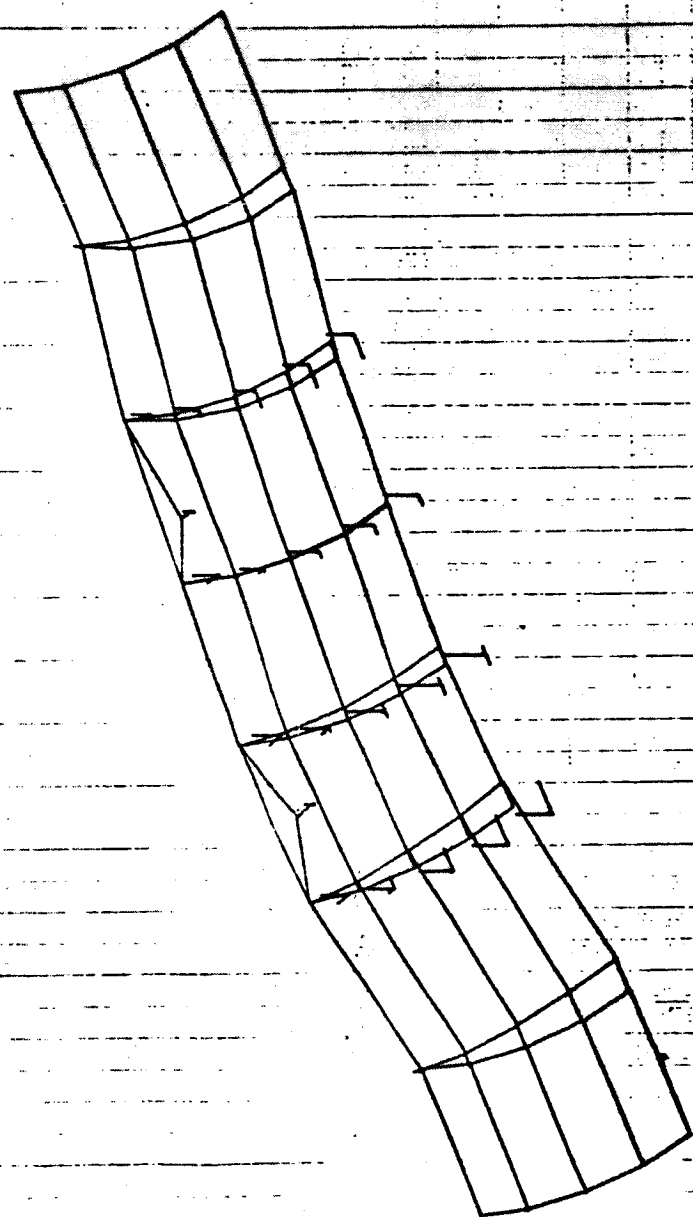


Figure 1: A schematic diagram of a curved structure, possibly a pipe or duct, showing internal components and flow direction. The diagram is oriented vertically on the page.

PHASE 1  
CRITICAL POINTS OF THE GAGE (WITH STRAPS)  
FIVE LOGS FILLED AT INTERFACE  
MEDIAL SECTION, SUBSISTANT 2 MODIF 2 PREQ. 1. 48280



Sheet 1 of 1

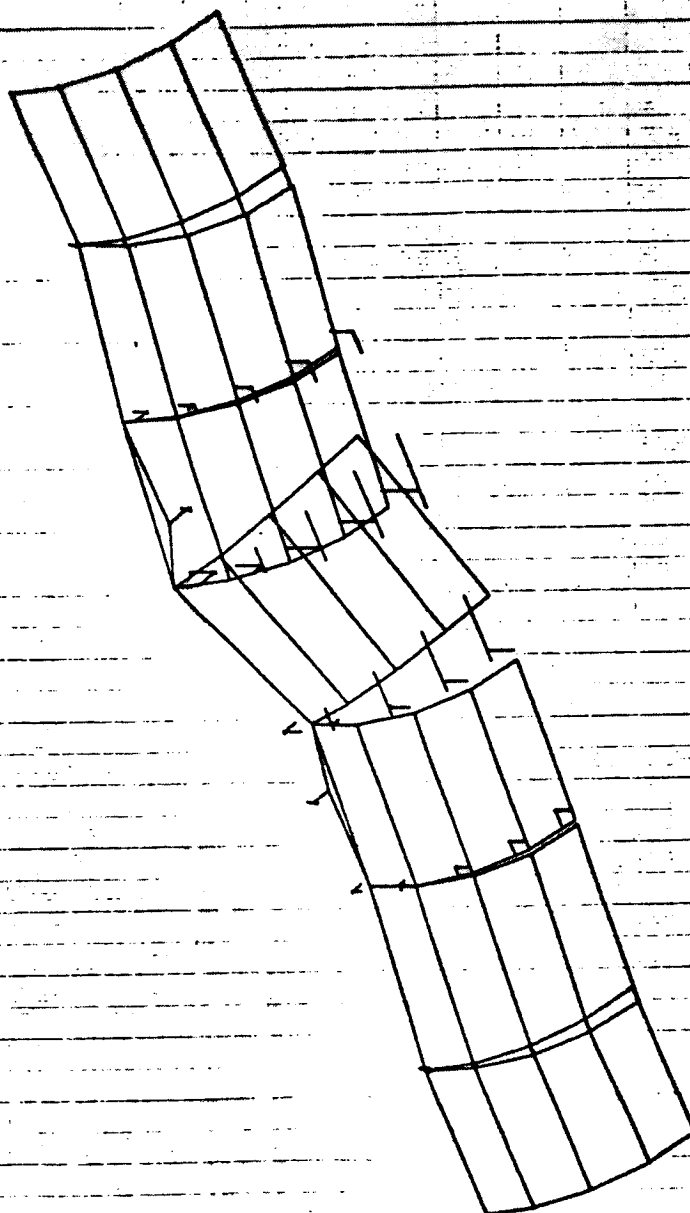
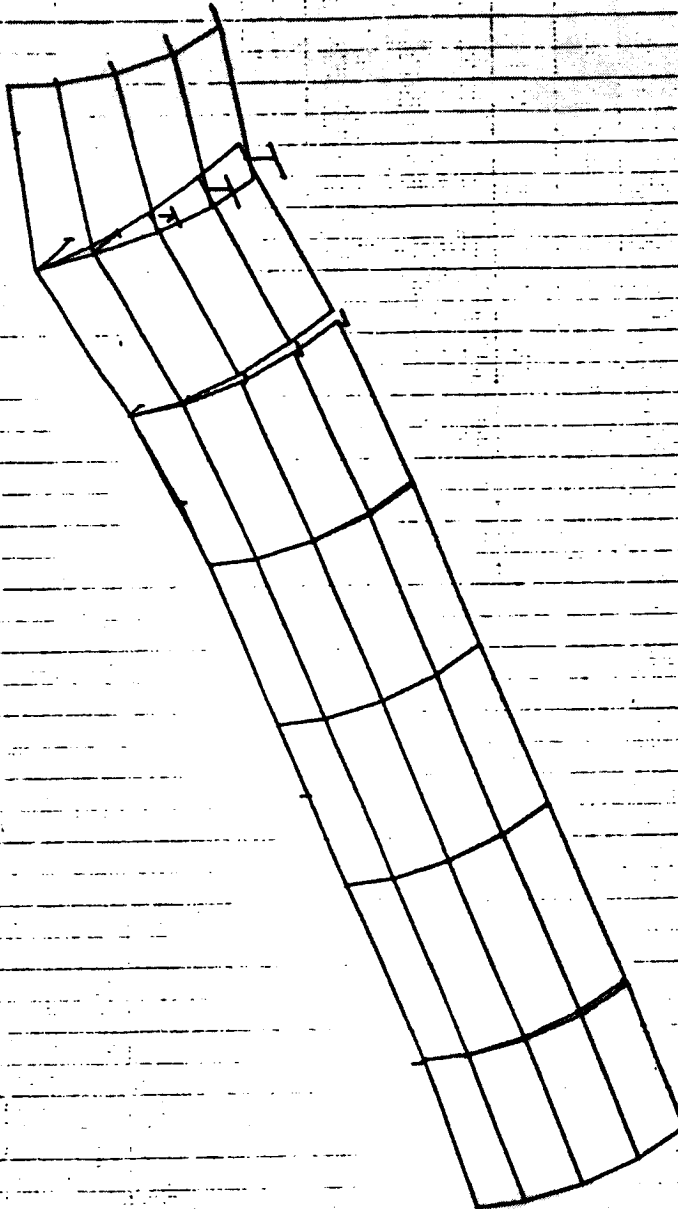


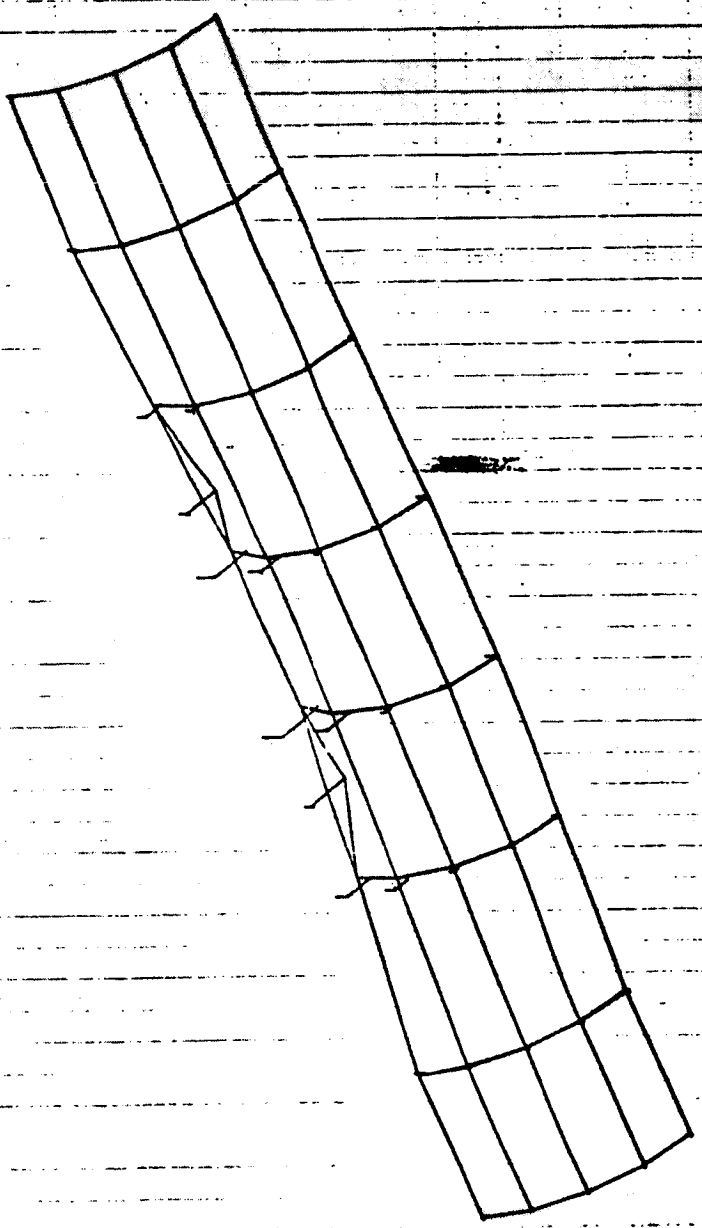
FIGURE 1  
SECTION THROUGH DUCT WITH STIFFERS  
PRICE INDEX FIXED AT INTERFAC  
LOCAL DESIGN, SUBSIDIARY 4, MODEL 4, PAPER, 09, 11000

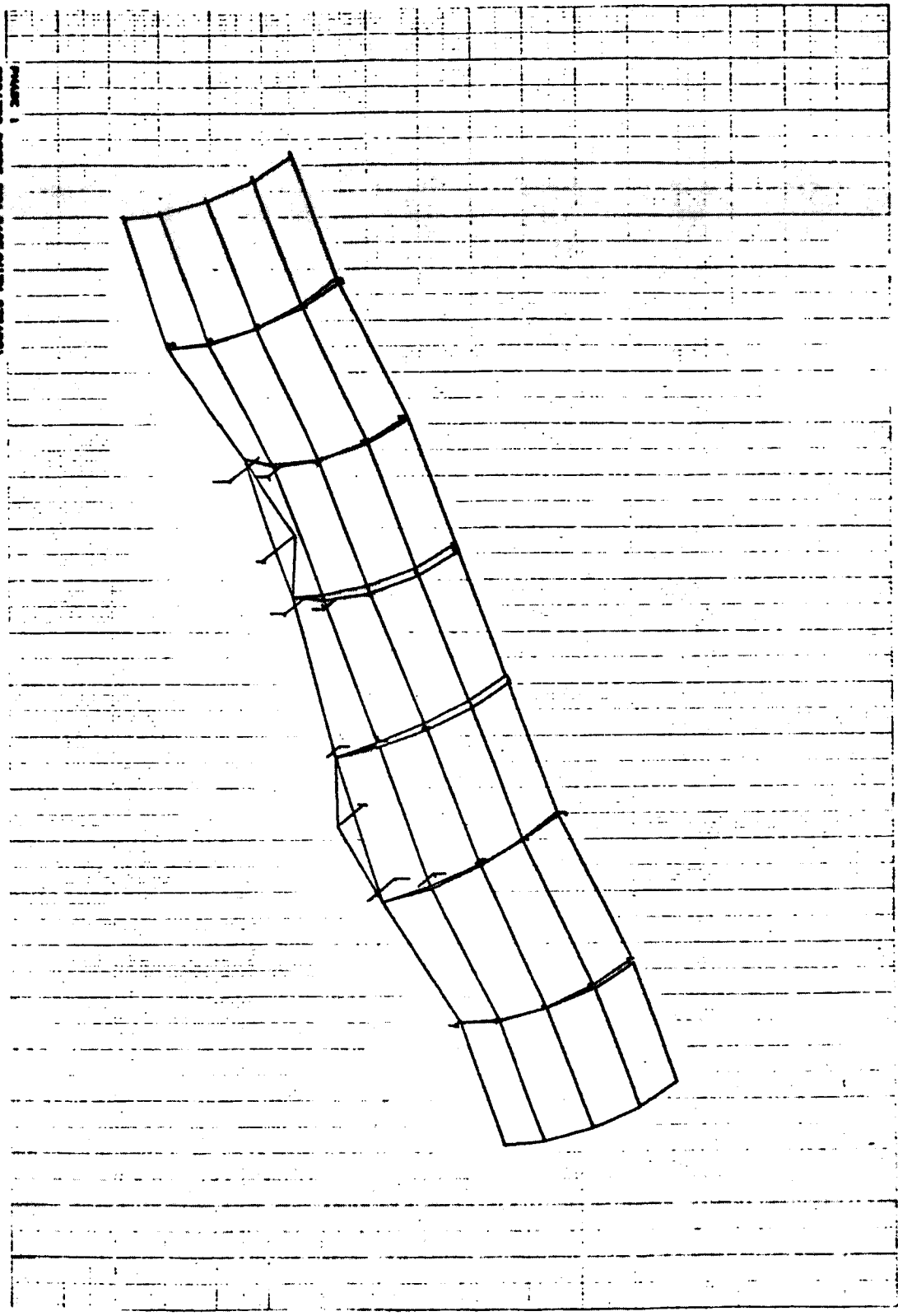




PAGE 1  
CHRISTEN WEDDING, ONE CASE WITH STRAUS)  
PRICE LABELS TYPED AT INVENTAGE  
MEDAL DESIGN, SURROUND & MORE & PRICE, 100, 9874

PHASE 2  
 CRITTER SCORING (WITH STRAPS)  
 PREC. SCORES GIVEN AT INTERFAC  
 MED. DETON. SUBCASE 1 MOD. 1 PREC. 100.0000





PHASE 1  
ORBITER BOOMS, ERM SATELLITE STRAPS  
FREE KNOTS PINS AT INTERFAC  
KRAL DETON. SUBSIST 8 MODC 8 PREC. 174.1808

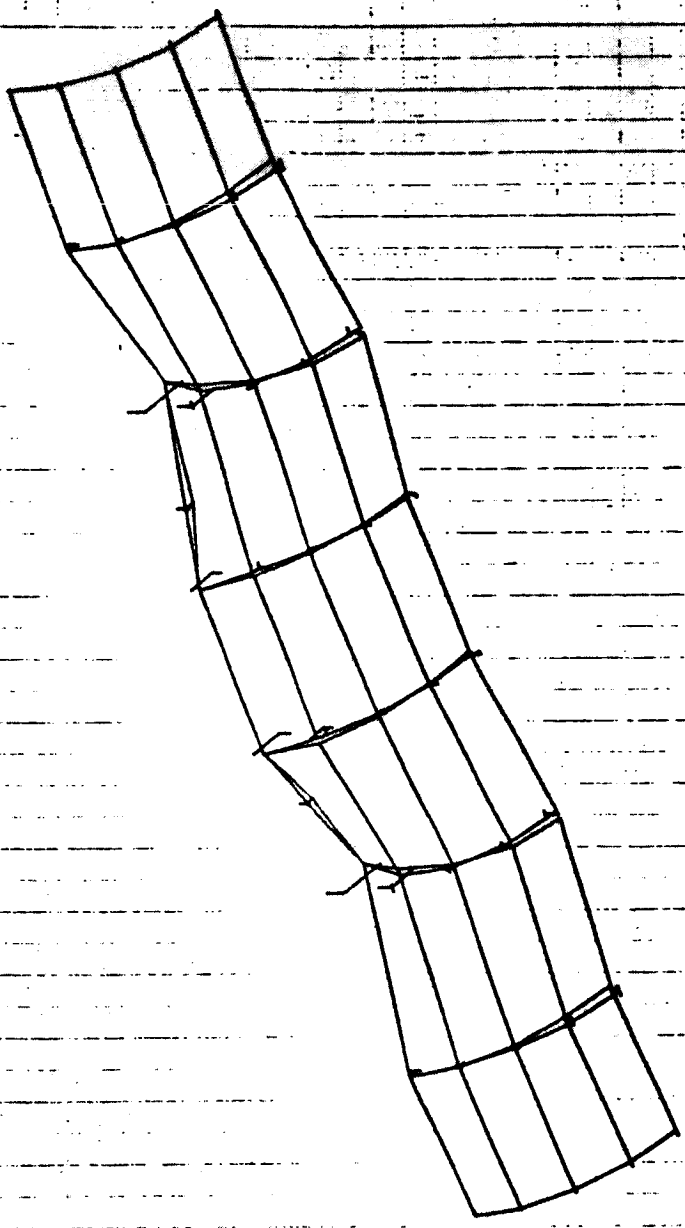


FIGURE 1  
REGISTERED DESIGNER'S SEAL (NOT STAMPED)  
FIVE WORDS PRINTED AT INTERFACES  
MAYAL, DICTOR, SURVIVOR, 1, MOORE, 1, P.W.C., 1, NO. 8847



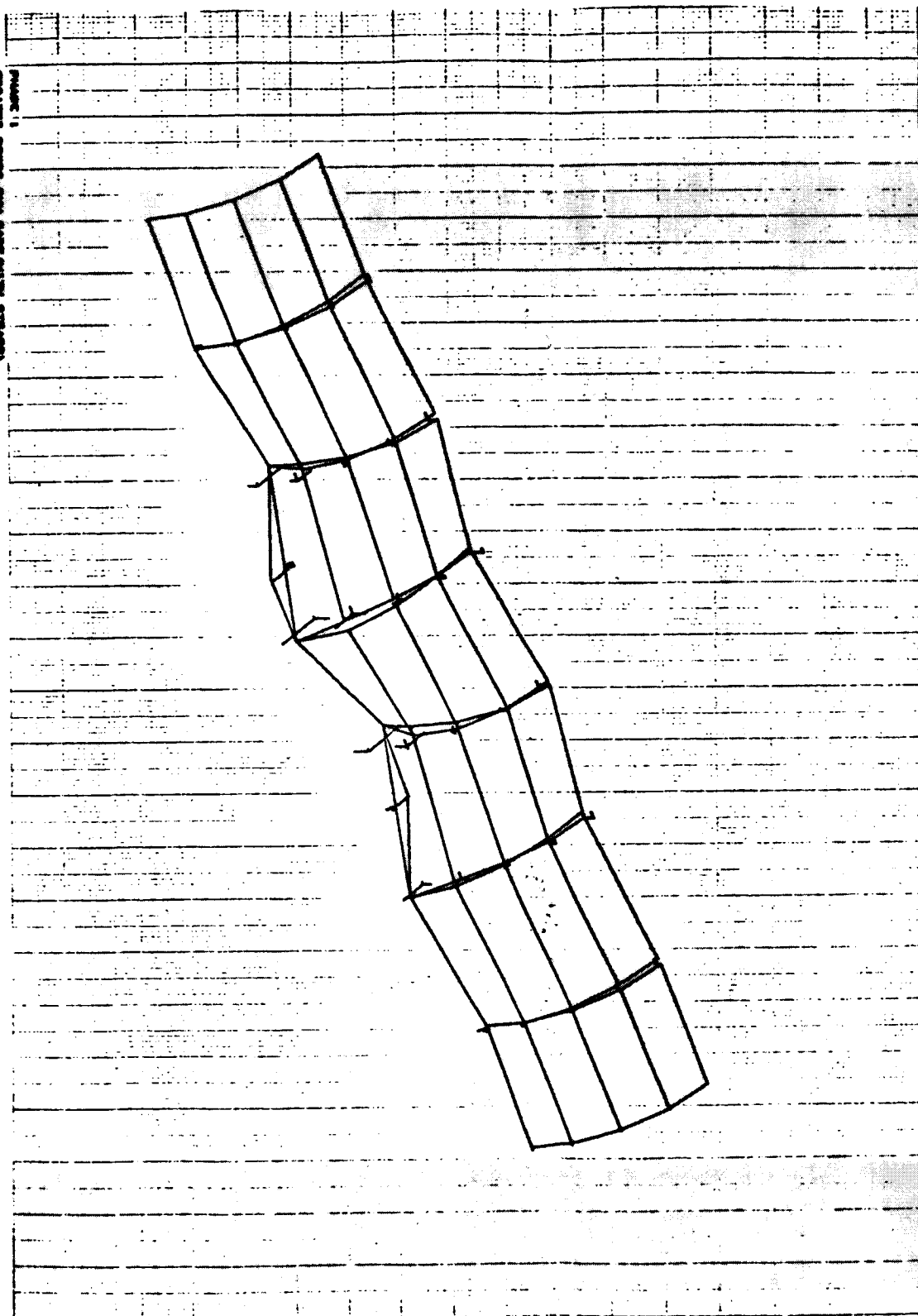
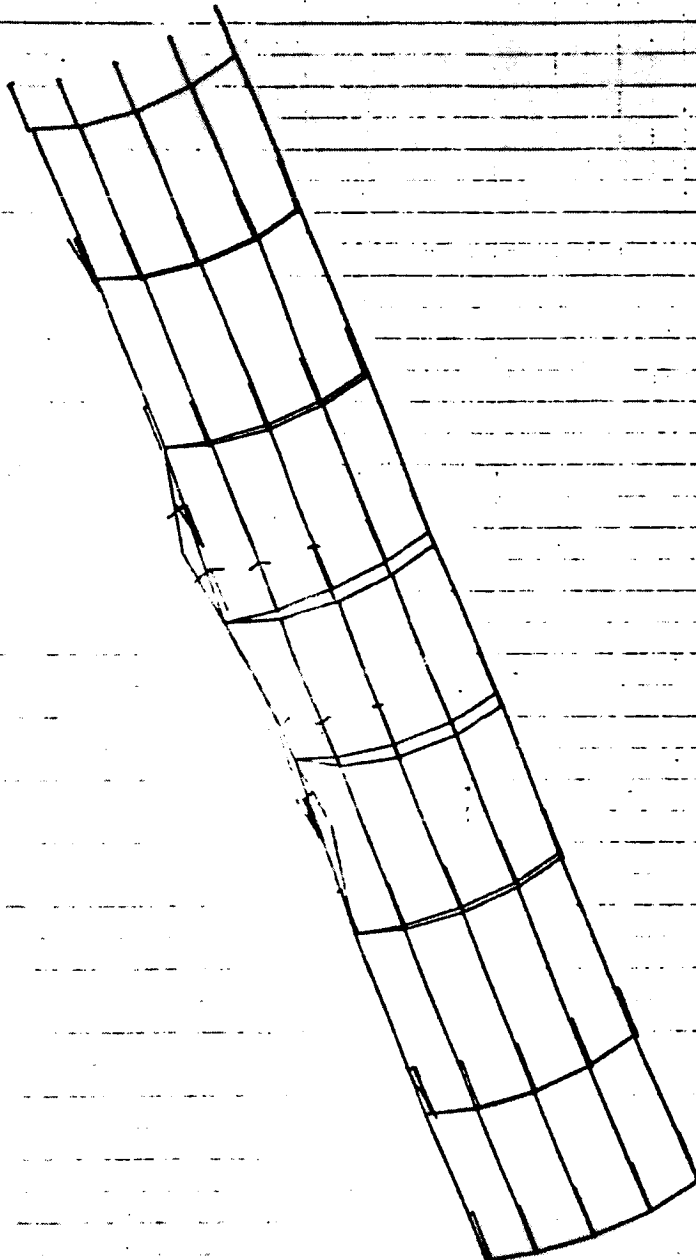
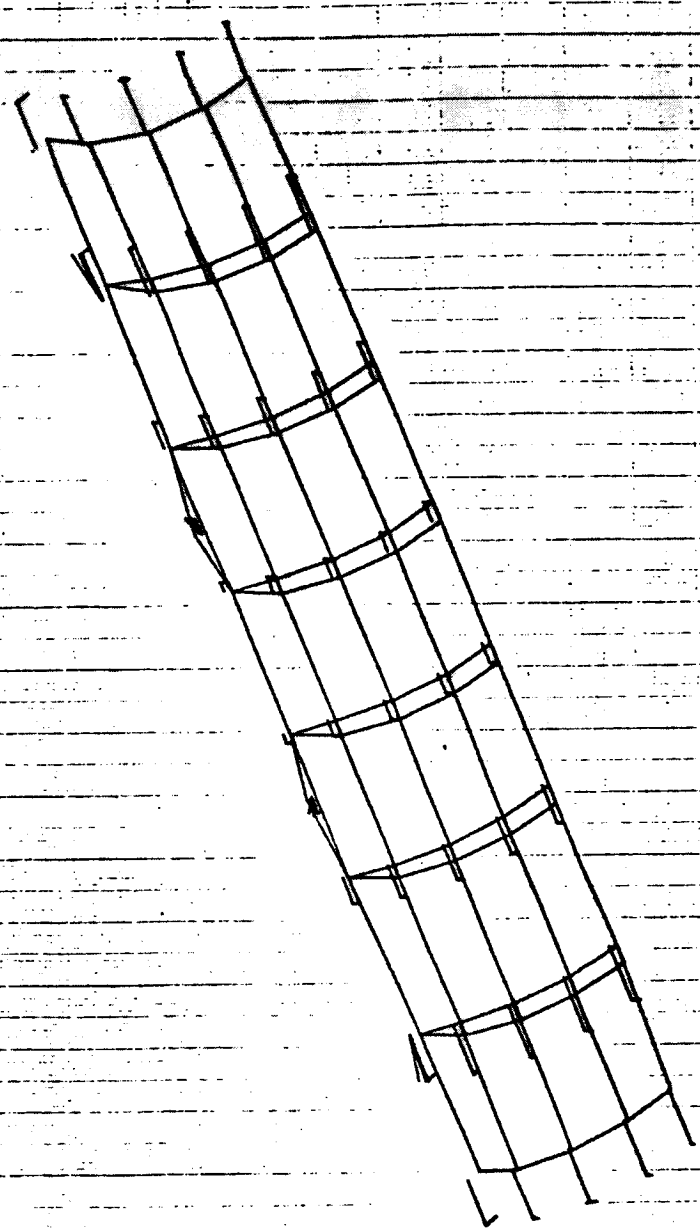


FIGURE 1  
 CURVED DUCT, SIDE VIEW (STAYED)  
 THREE VIEWS GIVEN AT INTERMEDIATE  
 ANGLES, DUCT, QUARTER TO ANGLES 10, 20, 30, 40

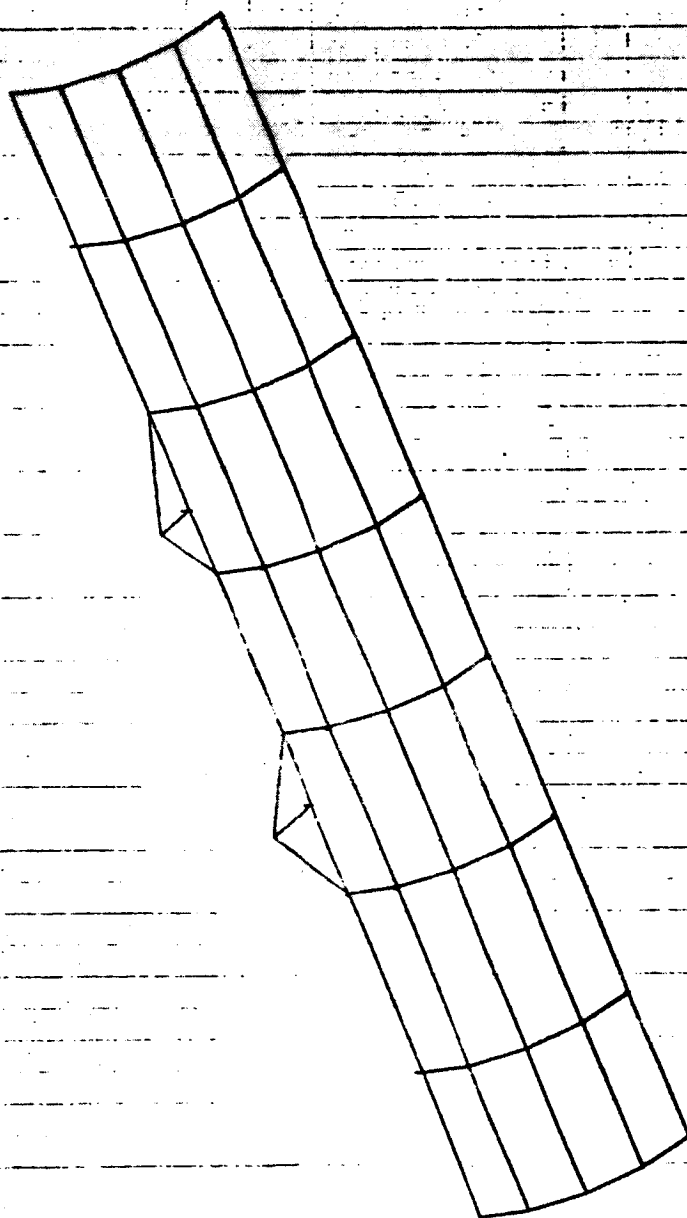
**PHASE 1**



PHASE 1  
 ONE-STEP SCISSOR, STEEL BARS WITH STRAP  
 FREE HANGING FROM INTERFAC  
 MODAL, REF. 100-107, 1, 100-107



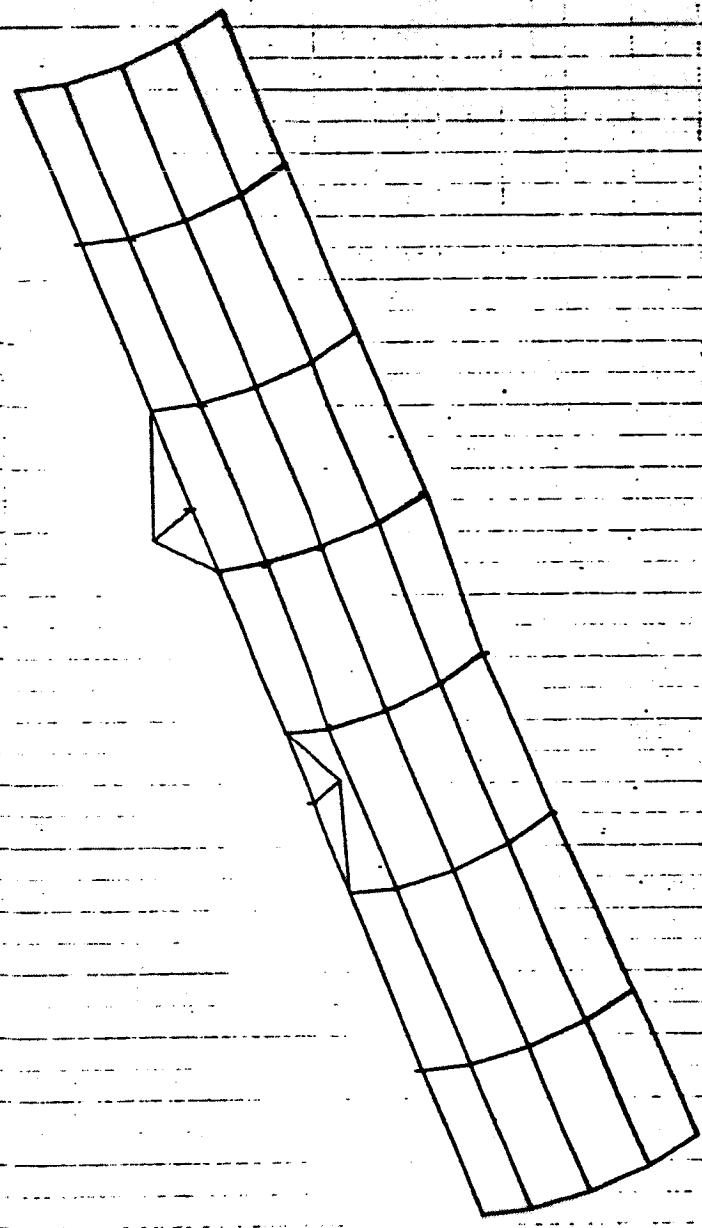
PHASE 1  
 ORBITER SUBSYSTEM CASECUTTH STRAPS  
 FREE MOVERS TIED AT INTERFAC  
 MODAL DEFORM. SUBCASE 13 NOTE 13 FREED. 000.001



8

A hand-drawn diagram on graph paper. The diagram depicts a curved, segmented structure, possibly a spine or a bundle of straws, oriented diagonally from the top-left towards the bottom-right. The structure is composed of several segments separated by curved lines. Along the top edge of the structure, there are labels 'A' through 'I' from top to bottom. At the bottom-right end, there are labels 'J' and 'K'. The entire drawing is set against a background of a grid of small squares.

PHASE 1  
UNBLENDED GROSS-ONE GAGE WITH STRAP  
FIVE LINES PLIERS AT INTERFAC  
ACQUA, OCTON, SURFACE 18 WIDE 18 FREQ. 750, 2048





MODAL DEVON, SURGAS 17 BOX 11 PHIL. 0214-9074



2

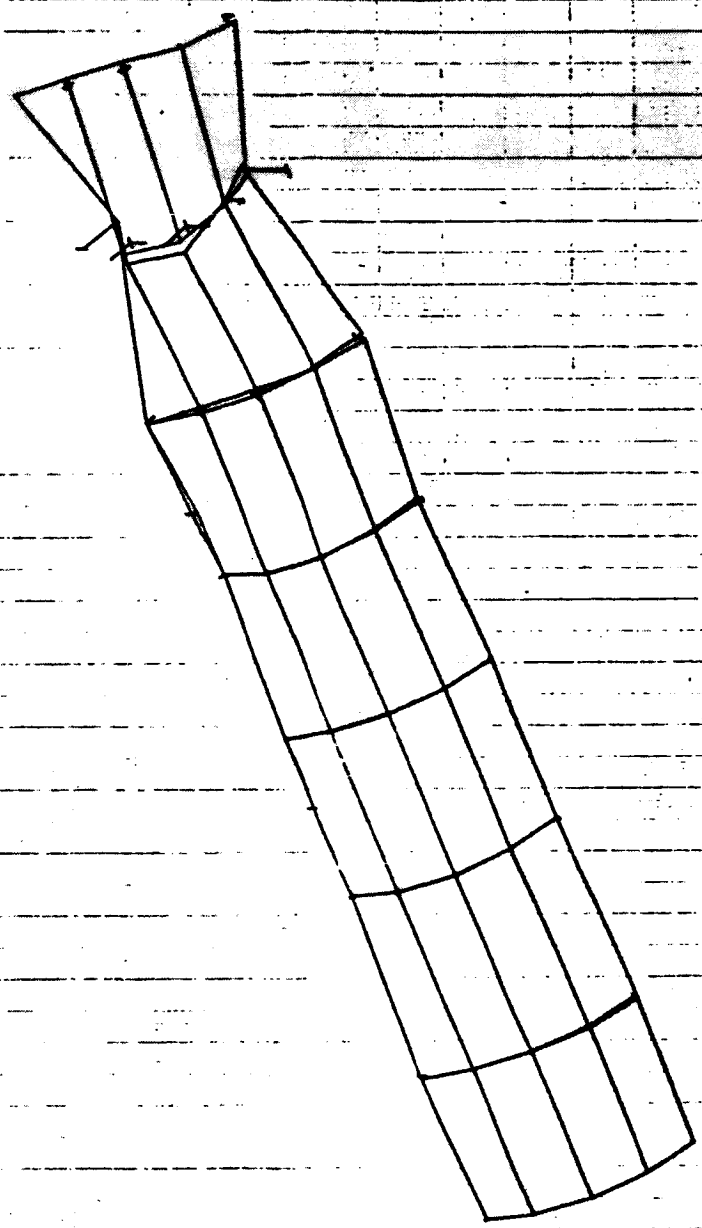
100

ORDERED BY THE COURT WITH STRAIGHT

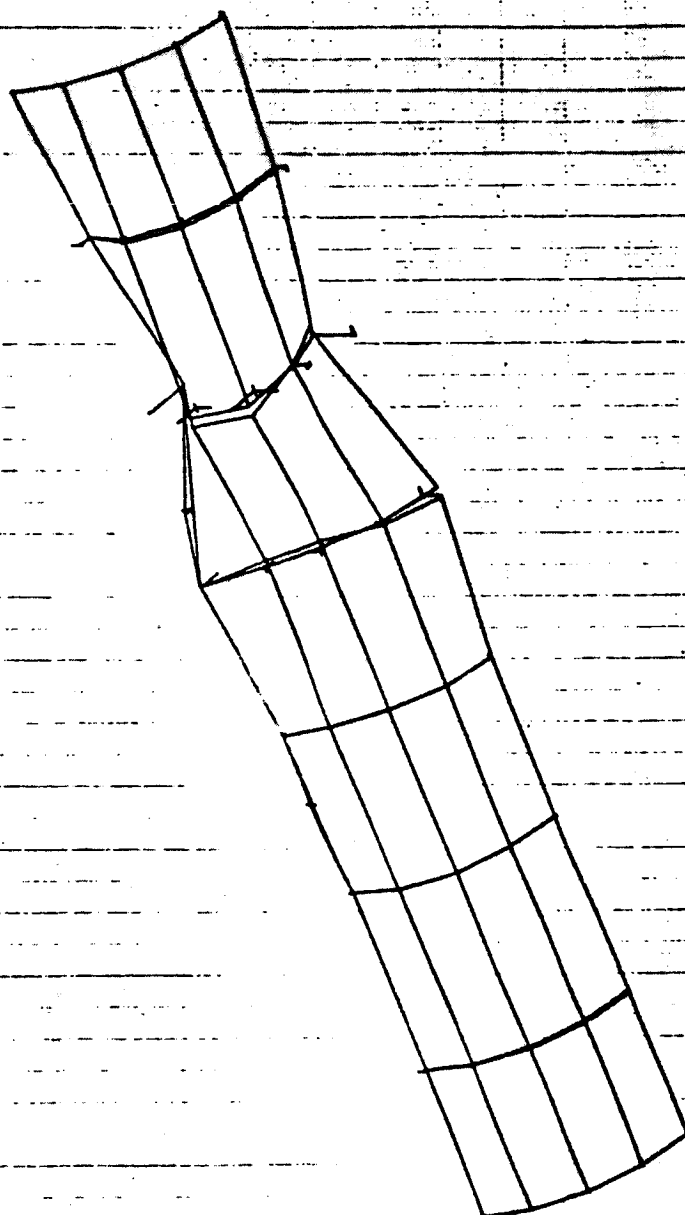
FACE BOOKS FILMED AT INTERVIEW

LEGAL DEPT., SUDBURY 10 WOOD 10 PRIN. 940.2470

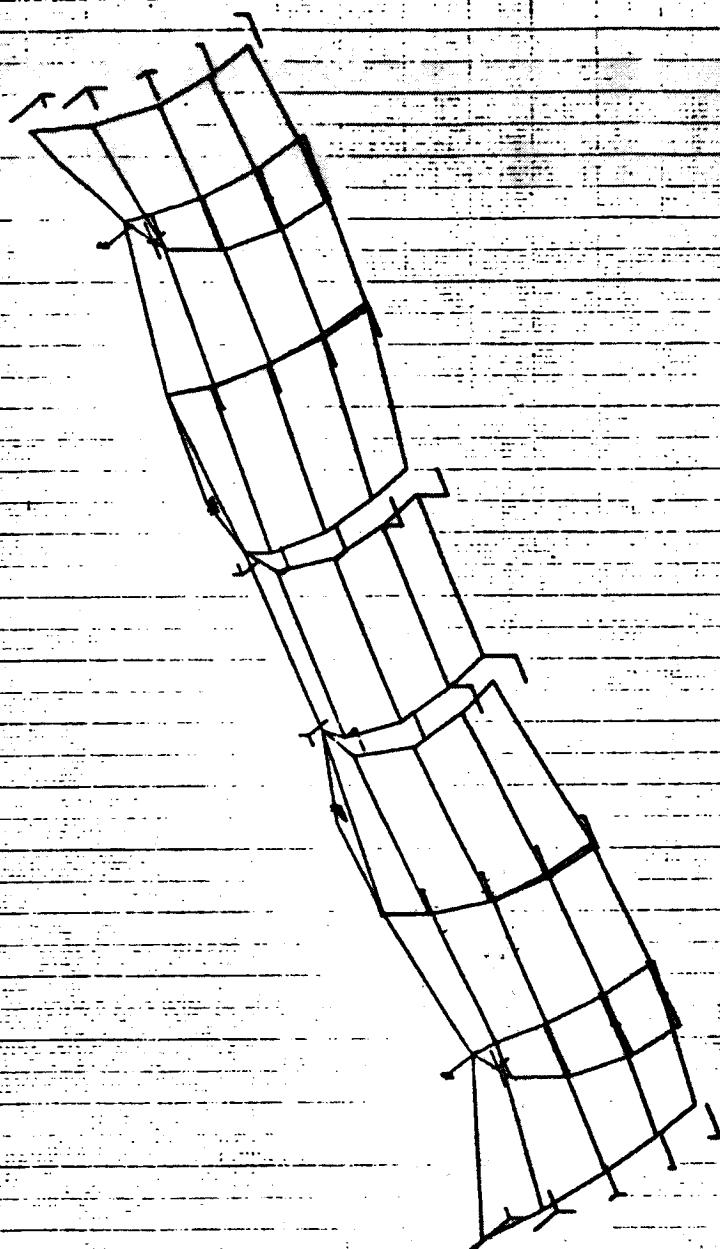
PHASE 1  
CRITTER SCORING SYSTEM STRIPES  
PREC MODES PILES AT INTERMEDIATE  
MODAL DETON. SUBGRADE 14 MODE 14 PREC. 44.0830



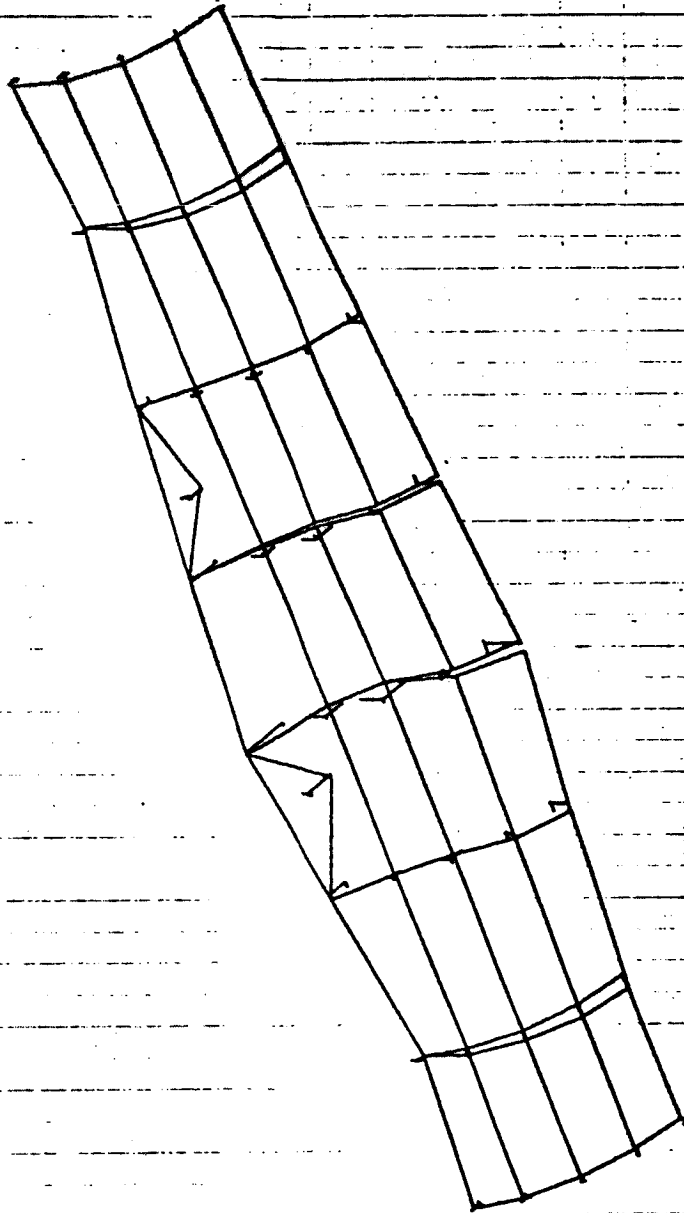
A hand-drawn diagram of a segmented, tapered object, possibly a telescope or a stylized letter 'L'. The object is composed of several rectangular segments joined together, with a grid pattern of lines. A small rectangular detail is visible on the right side of the lower segment. The drawing is done in black ink on a white background.



PHASE 1  
 ORIGIN 0000.000 000 000 000 000 000  
 PLOT MODES PLOTTED AT INTERPACT  
 MODAL DETON. SUBCARE 80 1000 21 PRCO. 400.0000



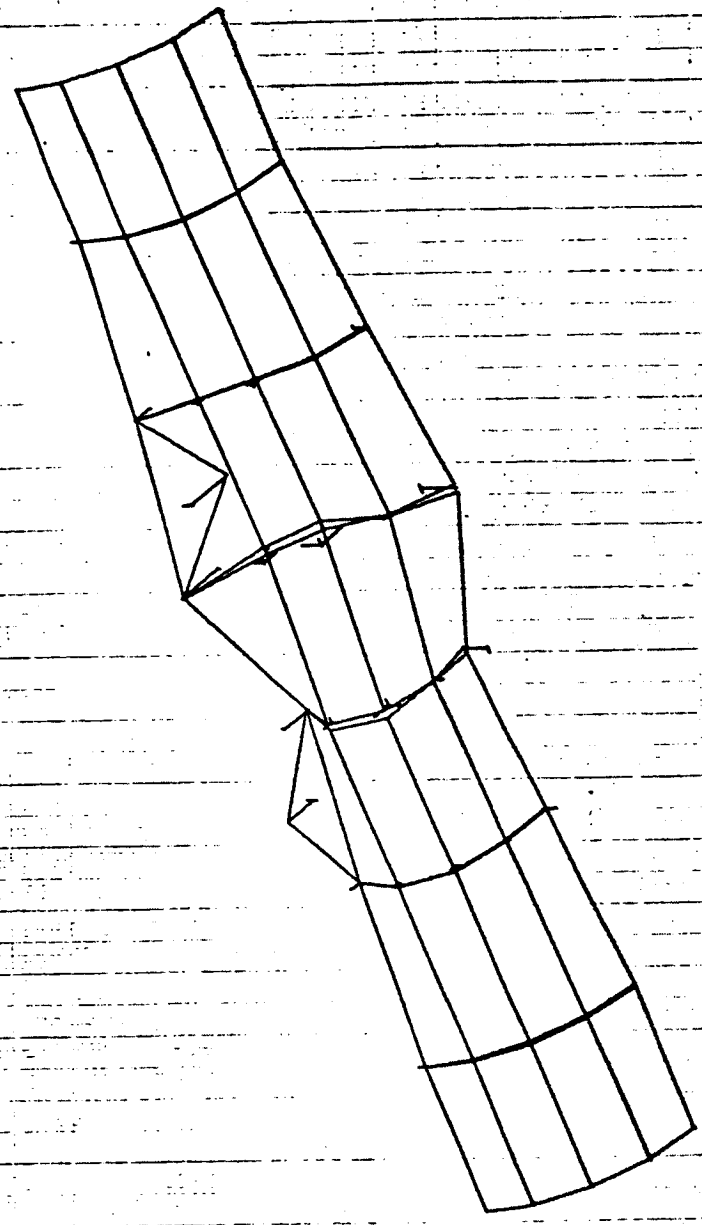
PHASE 1  
CRITTER SCORS, STU GAGE (WITH STUAPS)  
FREE MOORS P1ED AT INTERPACT  
MOAL DETON. SUBCASE 20 MOOK 29 PREG. 448, 7078



44 42774 444-007, - 1,04766700

24

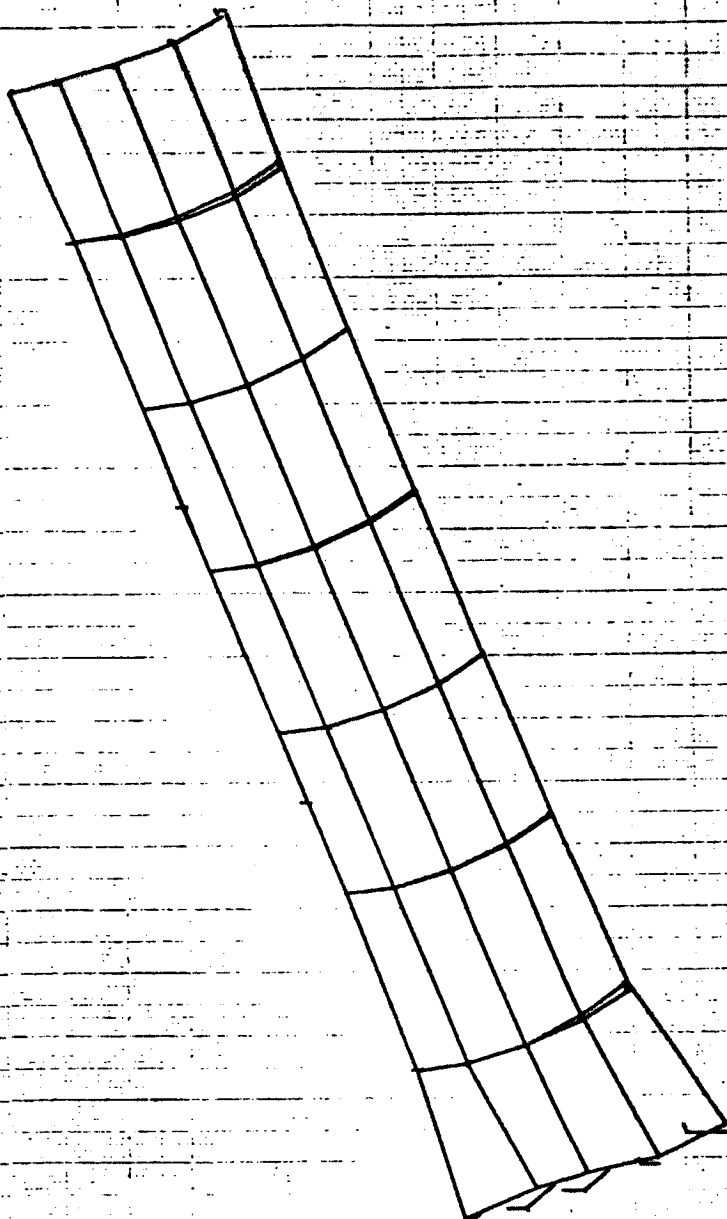
PHASE 1  
CRISTEN SCORP, 87% CASE WITH STRAPPS  
FACE MODES FIRED AT INTERFACE  
MOUL DEFON, SUBCASE 20 MODC 24 FREQ. 1018.229



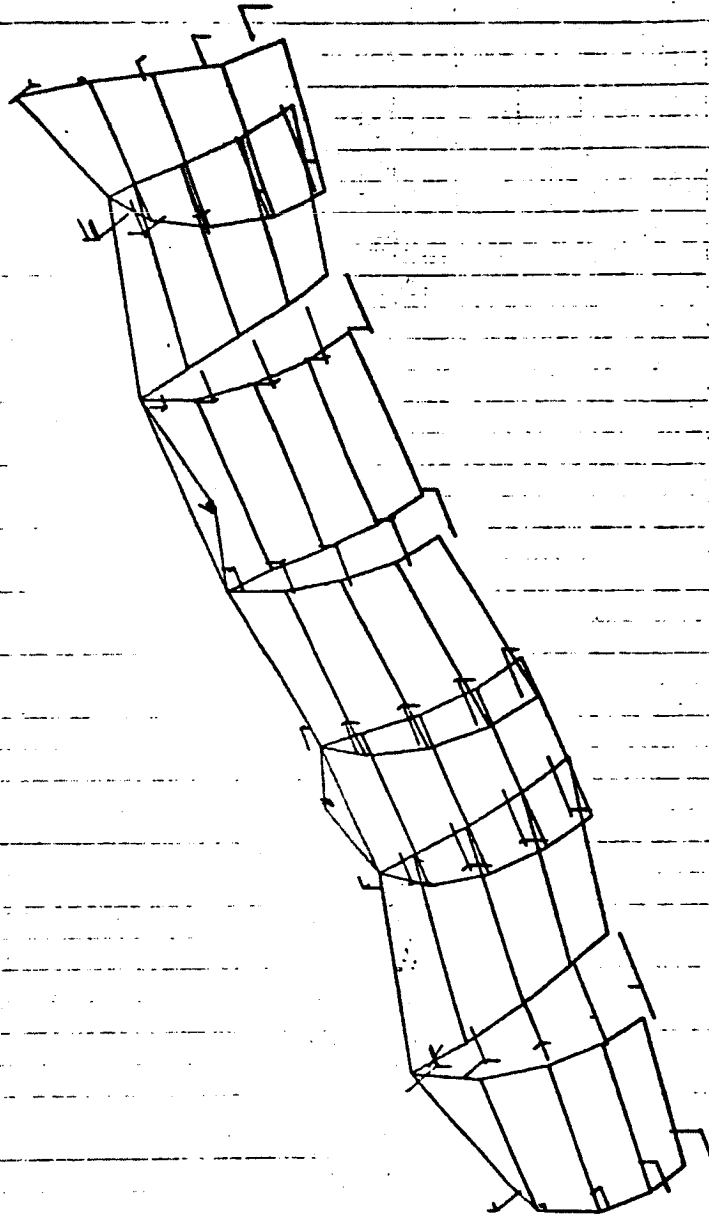




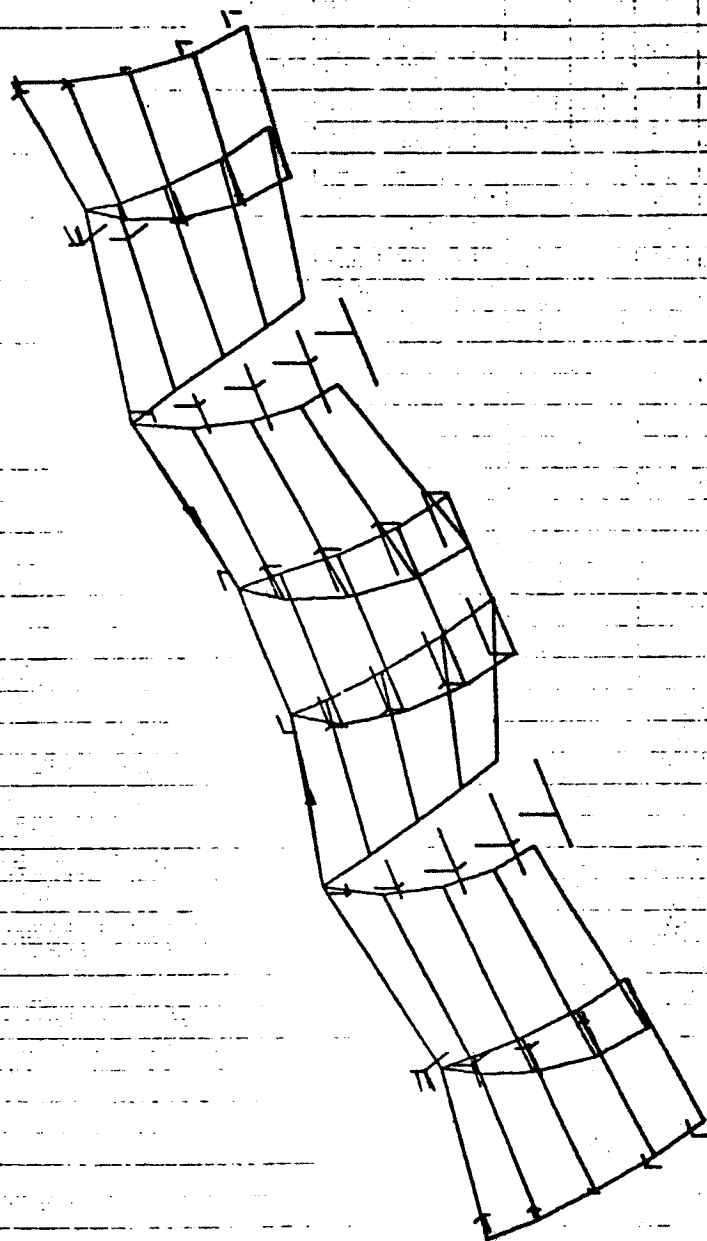
PHASE 1  
GRATER ROOMS, 6TH GATE WITH STAIRS  
THREE HOUSES FINEST AT INTERMEDIATE  
LOCAL, 6TH GATE, SUBURBAN TO ROAD IN PHASE, 10071, 0071

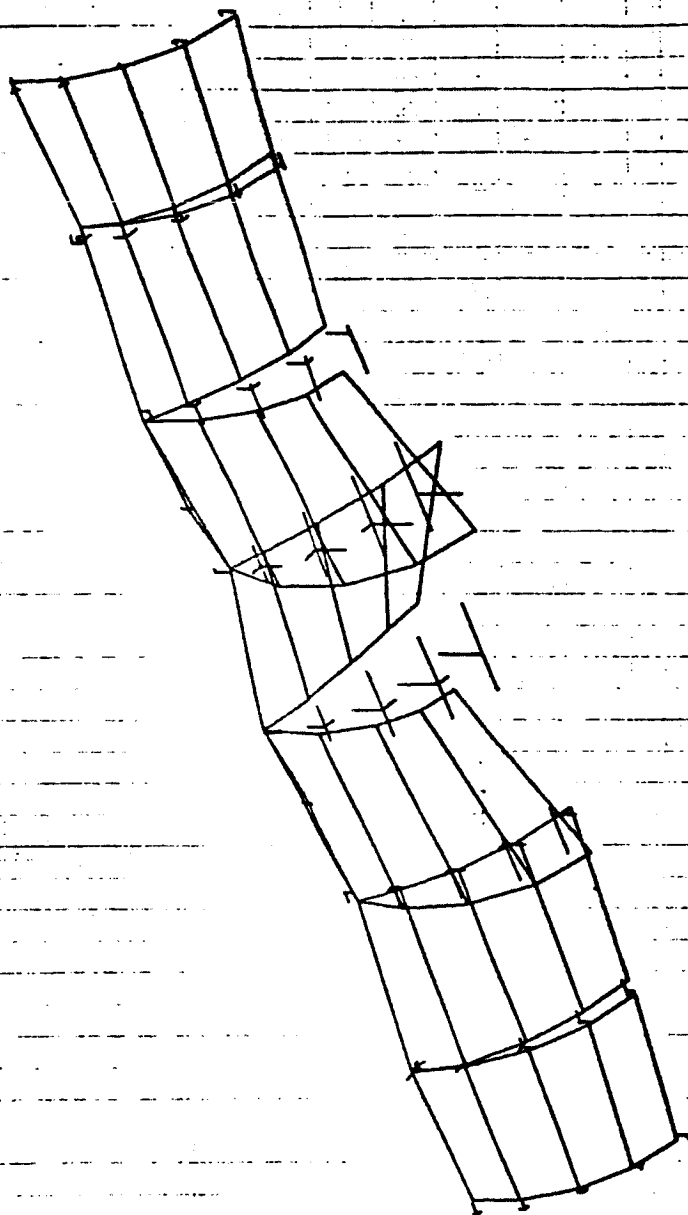


PHASE 1  
ONLITER 00000, 000 CASE WITH 000000  
FREE MODES P1000 AT INTERFAC  
LOCAL 00000, SUBCASE 00 MODE 01 FREE, 1100, 419



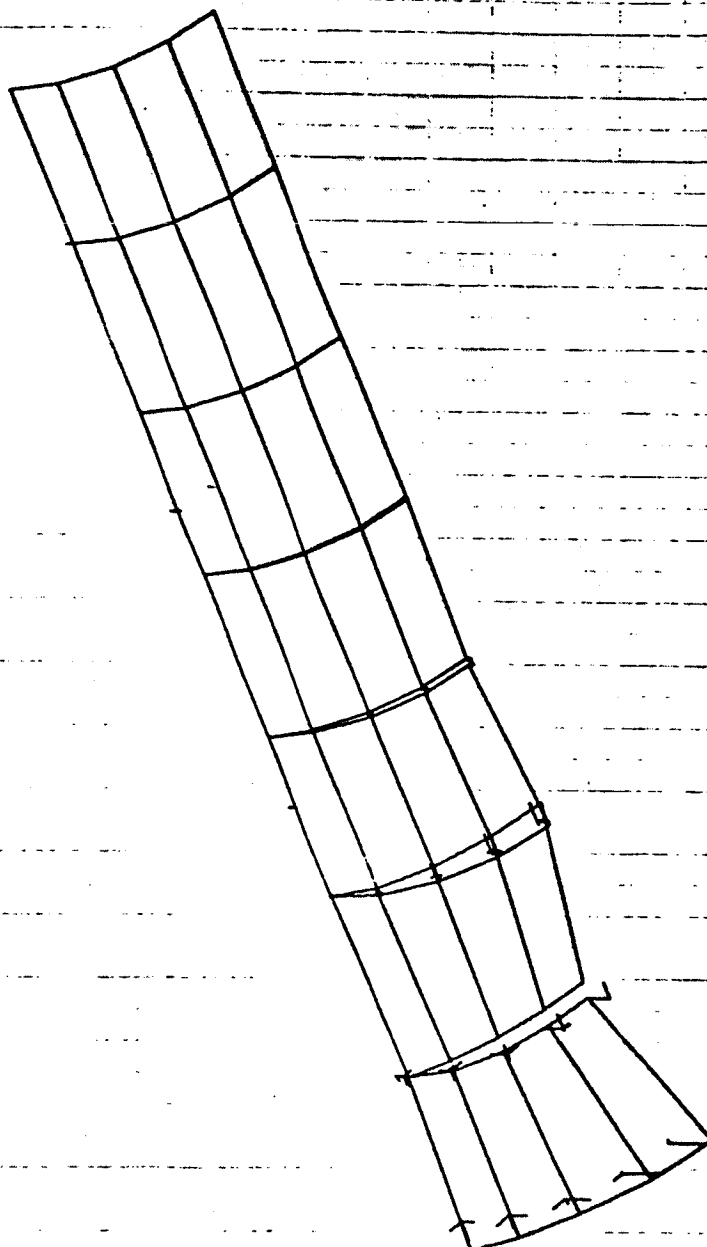
PHASE 1  
 ORIGIN BECOMES THE BASE WITH STRAIGHT  
 FREE MODES PLOTTED AT INTERFACES  
 MODAL DEFLECTION SUBCASE NO MODE NO FREQUENCY 1979.004



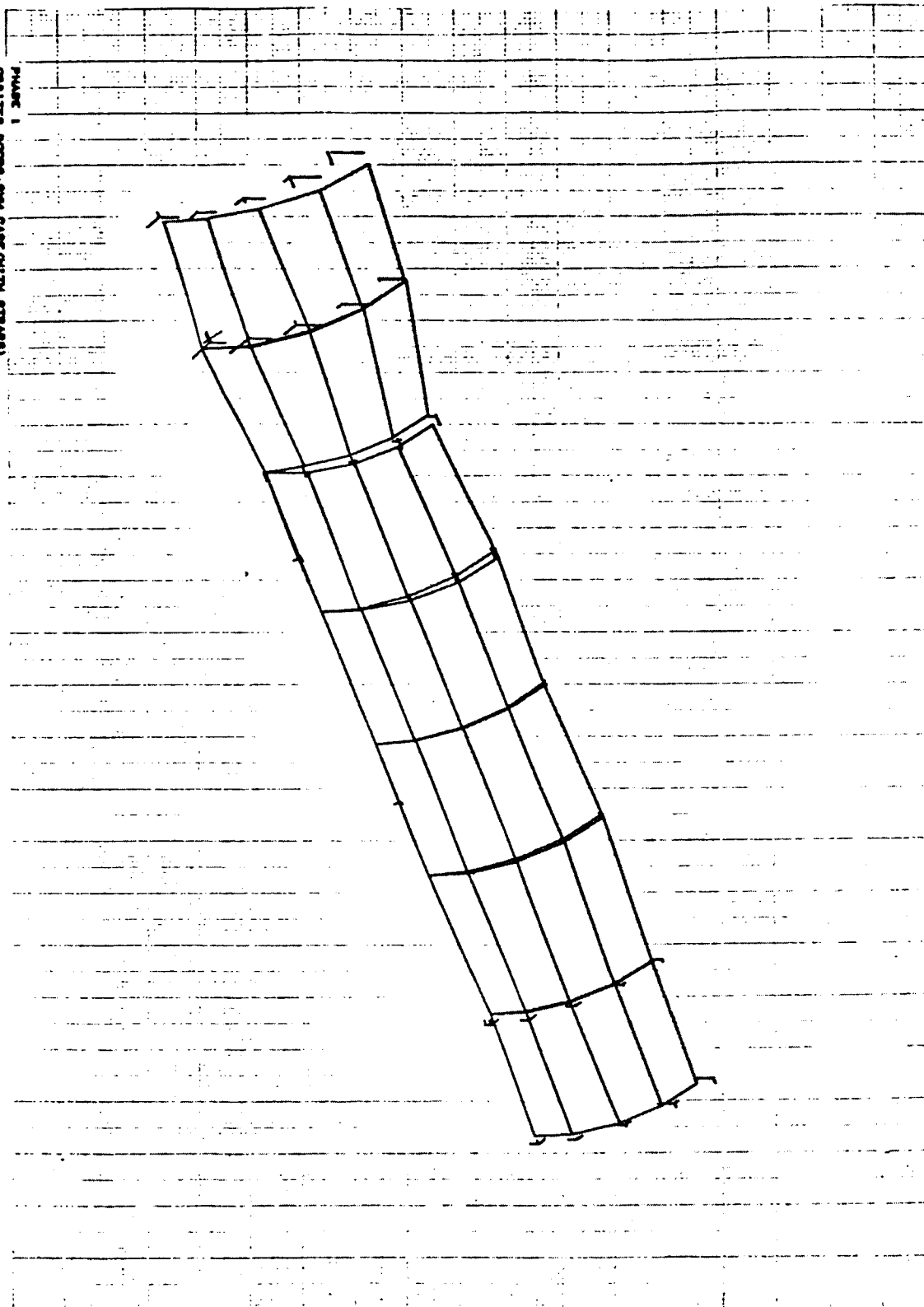


PHASE 1  
 ORBITAL DOORS, BYN GARE (WITH STRAPS)  
 FREE MOOD FIBER AT INTERFACE  
 MODAL DEFON, SUBCASE 20 MONI 29 FREO, 1818.448

A hand-drawn diagram of a segmented, cylindrical object, possibly a telescope or a stack of tubes, tilted diagonally. The object is composed of several rectangular segments joined by curved lines, suggesting a flexible or expandable structure. The drawing is done in black ink on a white background.

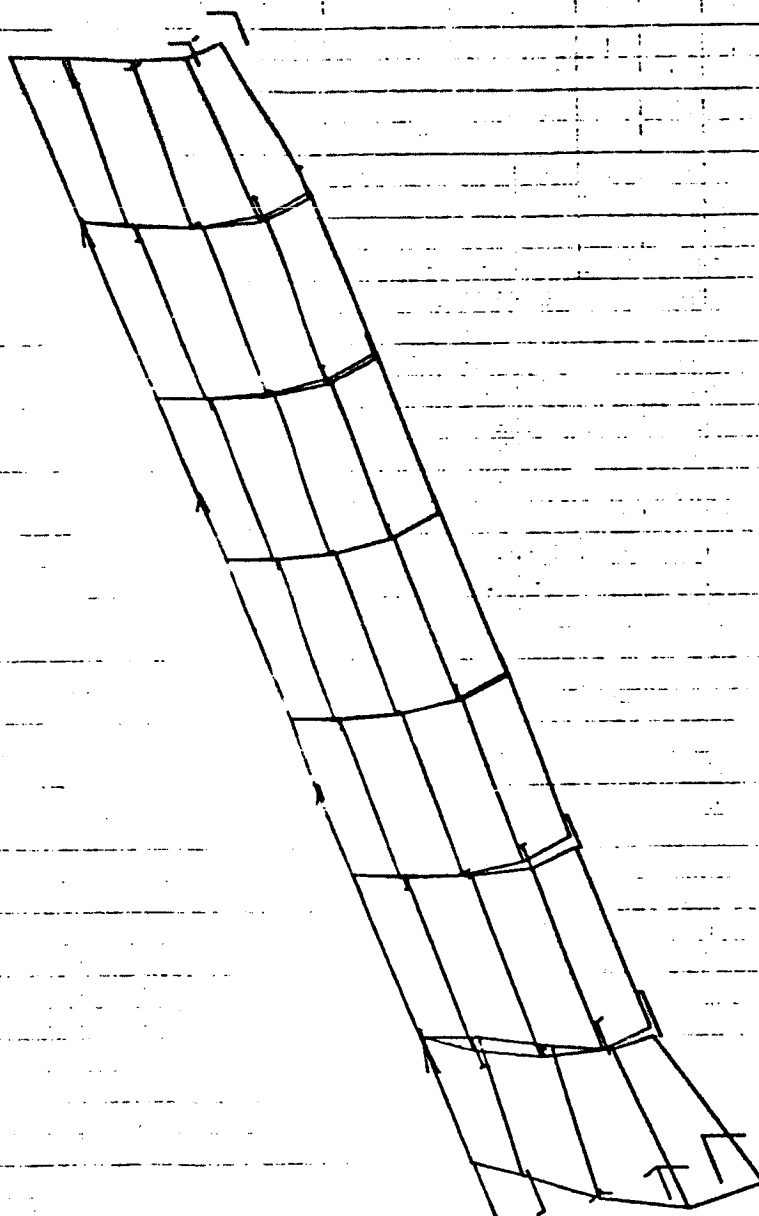


PHASE 1  
CRACKER DOOR, STEAK (WITH STAPLS)  
FREE MODES FIXED AT INTERFACE  
MODAL ORDER. SUBCASE 20 MODS 31  
CH2. 1804. 181



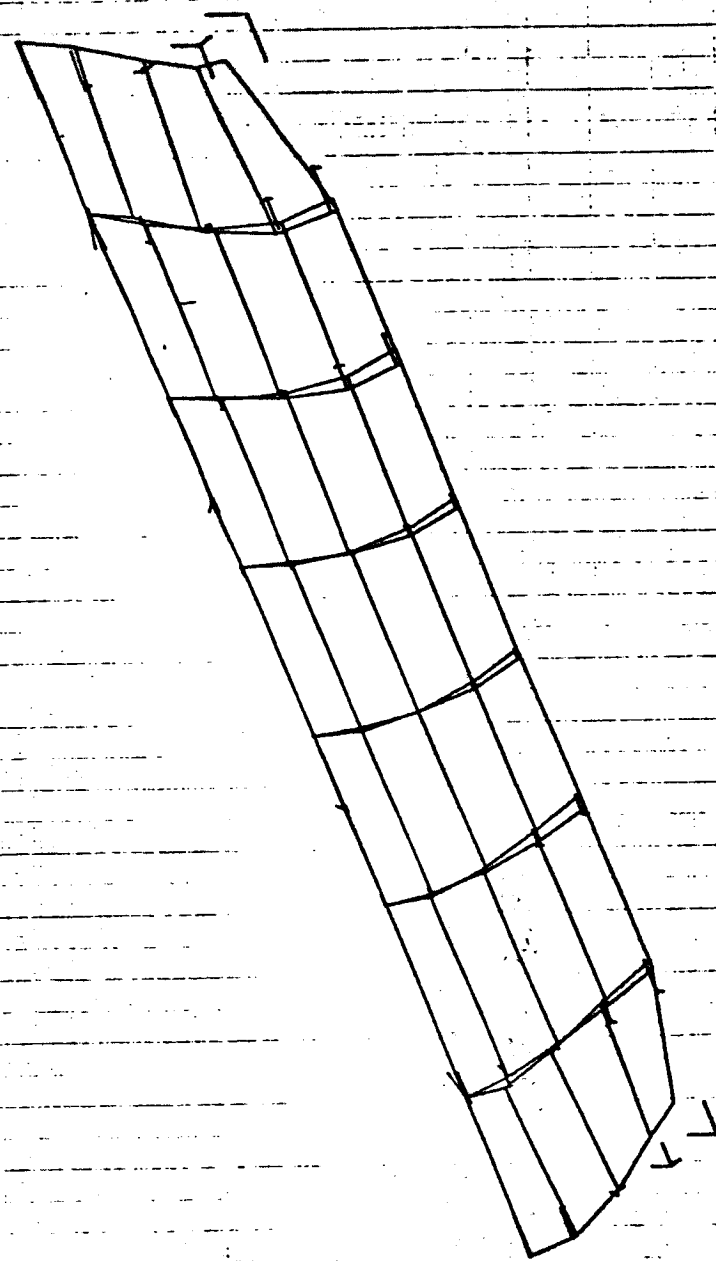
PHASE 1  
ORBITAL SCORING, ON CASE (WITH STRAPS)  
FREE MOON PILED AT INTERFACE  
MOON, OCTON, SURFACE 20 MOON 32 FREE, 1800, 000

PHASE 1  
 ORBITER OCCURS FROM SATELLITE STRAPERS  
 FREE MODES FIXED AT INTERMEDIATE  
 MODAL OCCUR. SUBCASE 20 MODAL 24 FREE, 2081, 248

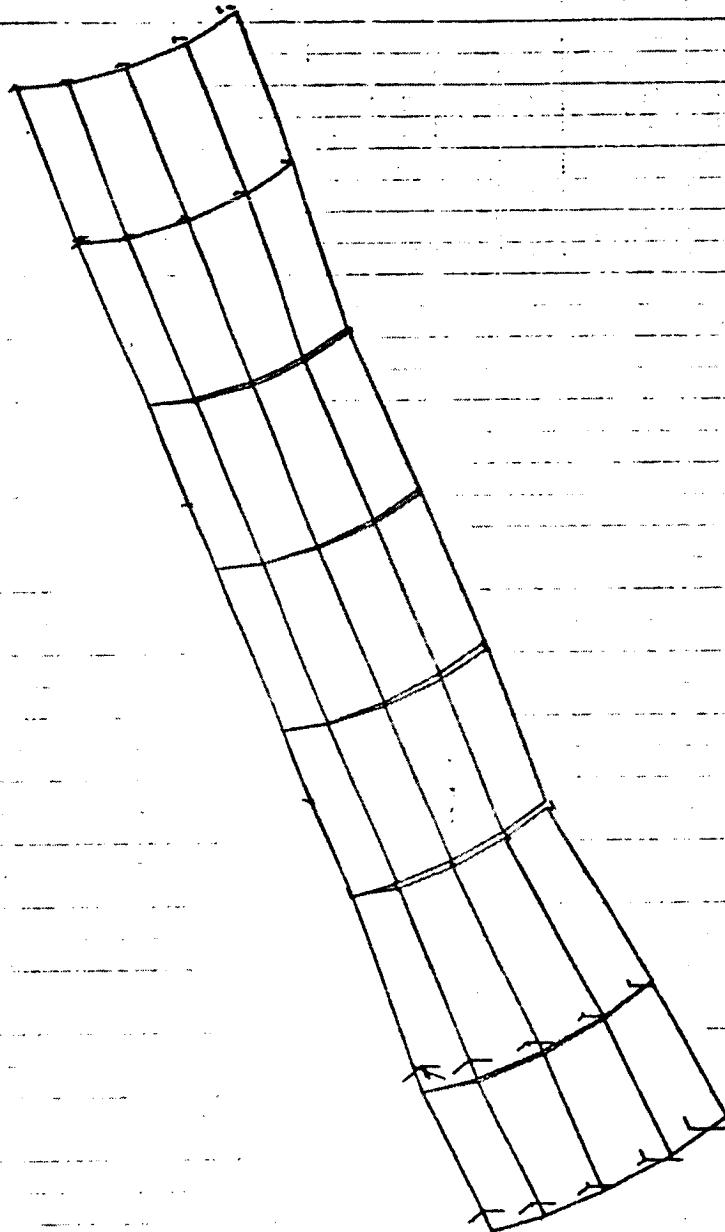




PHASE 1  
ORBITER SCORING, EVA GAGE (011111 STRAPS)  
FACE MODES FILLED AT INTERFAC  
MODAL DETON. SUBSCALE 20 MODC 26 FREQ. 2046.414



PHASE 1  
 ORBITER DOORS, GYM CASE WITH STRAPS  
 FREE MODES FIXED AT INTERFACE  
 MODAL DEFORM. SUBCASE 20 MODE 33 FREQ. 1082.771



**Appendix B9**  
**INPUT BULK DATA/PHASE I ANALYSIS: MODEL II FIN**

CASE CONTROL DECK ECHO

CARD COUNT	TITLE # PHASE 1
1	SOLUTITLE # FIN-SYMM WITH SPRINGS
2	MPG # 4451
3	SPC # 4401
4	METHOD # 1
5	MAXIMUMS # 30000
6	VICTOR # ALL
7	SURFACE # 1 # FREE MODS FIXED AT INTERFACE
8	LOADS # 20
9	OUTPUT PLOT
10	SET 61 # INCLUDE 4401 THRU 4424
11	SET 62 # INCLUDE 4431 THRU 4452
12	SET 63 # INCLUDE 4461 THRU 4529
13	PLOTTER CALCOMP 765-105
14	AXIS # MY, X, Z
15	VIEW # 45, 20, 30, 0, 0, 0
16	MAXIMUM DEFORMATION 2.0
17	FIND SCALING ORIGIN 62, 51, 61
18	PLOT MIDAL DEFORMATION 1 THRU 20, SET 61, ORIGIN 62, SHAPE VECTOR XYZ
19	REGIN BULK
20	
21	

\*\*\* USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED, XSORT WILL RE-ORDER DECK.

CARD COUNT		SORTED BULK DATA ECHO														
		1	2	3	4	5	6	7	8	9	10					
1-	CELAS2	11	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2-	CELAS2	12	3	3	3	3	3	3	3	3	3	3	3	3	3	3
3-	CELAS2	13	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4-	CONM1	4400	3,000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-	ECM1	3,000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6-	ECM2	13,725	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7-	CONRUD	4400	4401	4401	4411	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
8-	CONRUD	4491	4402	4402	4412	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
9-	CONRUD	4492	4403	4403	4415	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
10-	CONRUD	4493	4404	4404	4416	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
11-	CONRUD	4494	4405	4405	4419	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
12-	CONRUD	4495	4406	4406	4420	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
13-	CONRUD	4496	4407	4407	4421	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
14-	CONRUD	4497	4408	4408	4422	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
15-	CONRUD	4498	4409	4409	4425	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
16-	CONRUD	4499	4410	4410	4426	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
17-	CONRUD	4500	4411	4411	4429	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
18-	CONRUD	4501	4412	4412	4430	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
19-	CONRUD	4502	4413	4413	4431	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
20-	CONRUD	4503	4414	4414	4432	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
21-	CONRUD	4504	4415	4415	4435	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
22-	CONRUD	4505	4416	4416	4436	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
23-	CONRUD	4506	4417	4417	4439	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
24-	CONRUD	4507	4418	4418	4440	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
25-	CONRUD	4508	4419	4419	4441	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
26-	CONRUD	4509	4420	4420	4442	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
27-	CONRUD	4510	4421	4421	4445	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
28-	CONRUD	4511	4422	4422	4446	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
29-	CONRUD	4512	4423	4423	4449	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
30-	CONRUD	4513	4424	4424	4450	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
31-	CONRUD	4514	4425	4425	4451	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
32-	CONRUD	4515	4426	4426	4452	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
33-	CONRUD	4516	4427	4427	4455	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
34-	CONRUD	4517	4428	4428	4456	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
35-	CONRUD	4518	4429	4429	4459	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
36-	CONRUD	4519	4430	4430	4460	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
37-	CONRUD	4520	4431	4431	4461	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
38-	CONRUD	4521	4432	4432	4462	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
39-	CONRUD	4522	4433	4433	4465	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
40-	CONRUD	4523	4434	4434	4466	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
41-	CONRUD	4524	4435	4435	4469	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
42-	CONRUD	4525	4436	4436	4470	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
43-	CONRUD	4526	4437	4437	4463	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
44-	CONRUD	4527	4438	4438	4465	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
45-	CONRUD	4528	4439	4439	4467	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
46-	CONRUD	4529	4440	4440	4467	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401	4401
47-	CONRUD	4412	0	0	166.5	75.0	166.5	75.0	166.5	75.0	166.5	75.0	166.5	75.0	166.5	75.0
48-	EC4412	200.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49-	CONRUD	4413	200.0	0	0	0	0	0	0	0	0	0	0	0	0	0
50-	EC4413	200.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

CARD	COUNT	1	2	3	4	5	6	7	8	9	10
51-	CORD2R	4416	0.0	0.0	176.1253.0	75.0	183.3422.0	87.5	87.5	87.5	87.5
52-	CORD2R	4416	0.0	0.0	176.1253.0	75.0	183.3422.0	87.5	87.5	87.5	87.5
53-	CORD2R	4420	0.0	0.0	182.3663.0	75.0	186.8	87.5	87.5	87.5	87.5
54-	CORD2R	4420	0.0	0.0	182.3663.0	75.0	186.8	87.5	87.5	87.5	87.5
55-	CORD2R	4401	4401	4401	4403	4413	4411	4411	4411	4411	4411
56-	CORD2R	4402	4402	4401	4405	4415	4415	4415	4415	4415	4415
57-	CORD2R	4403	4403	4401	4407	4417	4417	4417	4417	4417	4417
58-	CORD2R	4404	4404	4401	4409	4419	4419	4419	4419	4419	4419
59-	CORD2R	4405	4405	4401	4413	4423	4423	4423	4423	4423	4423
60-	CORD2R	4406	4406	4401	4415	4425	4425	4425	4425	4425	4425
61-	CORD2R	4407	4407	4401	4417	4427	4427	4427	4427	4427	4427
62-	CORD2R	4408	4408	4401	4419	4429	4429	4429	4429	4429	4429
63-	CORD2R	4409	4409	4401	4423	4433	4433	4433	4433	4433	4433
64-	CORD2R	4410	4410	4401	4425	4435	4435	4435	4435	4435	4435
65-	CORD2R	4411	4411	4401	4427	4437	4437	4437	4437	4437	4437
66-	CORD2R	4412	4412	4401	4429	4439	4439	4439	4439	4439	4439
67-	CORD2R	4413	4413	4401	4433	4443	4443	4443	4443	4443	4443
68-	CORD2R	4414	4414	4401	4435	4445	4445	4445	4445	4445	4445
69-	CORD2R	4415	4415	4401	4437	4447	4447	4447	4447	4447	4447
70-	CORD2R	4416	4416	4401	4439	4449	4449	4449	4449	4449	4449
71-	CORD2R	4417	4417	4401	4443	4453	4453	4453	4453	4453	4453
72-	CORD2R	4418	4418	4401	4445	4455	4455	4455	4455	4455	4455
73-	CORD2R	4419	4419	4401	4447	4457	4457	4457	4457	4457	4457
74-	CORD2R	4420	4420	4401	4449	4459	4459	4459	4459	4459	4459
75-	CORD2R	4421	4421	4401	4451	4461	4461	4461	4461	4461	4461
76-	CORD2R	4422	4422	4401	4453	4463	4463	4463	4463	4463	4463
77-	CORD2R	4423	4423	4401	4455	4465	4465	4465	4465	4465	4465
78-	CORD2R	4424	4424	4401	4457	4467	4467	4467	4467	4467	4467
79-	CORD2R	4425	4425	4401	4459	4469	4469	4469	4469	4469	4469
80-	CORD2R	4426	4426	4401	4461	4471	4471	4471	4471	4471	4471
81-	CORD2R	4427	4427	4401	4463	4473	4473	4473	4473	4473	4473
82-	CORD2R	4428	4428	4401	4465	4475	4475	4475	4475	4475	4475
83-	CORD2R	4429	4429	4401	4467	4477	4477	4477	4477	4477	4477
84-	CORD2R	4430	4430	4401	4469	4479	4479	4479	4479	4479	4479
85-	CORD2R	4431	4431	4401	4471	4481	4481	4481	4481	4481	4481
86-	CORD2R	4432	4432	4401	4473	4483	4483	4483	4483	4483	4483
87-	CORD2R	4433	4433	4401	4475	4485	4485	4485	4485	4485	4485
88-	CORD2R	4434	4434	4401	4477	4487	4487	4487	4487	4487	4487
89-	CORD2R	4435	4435	4401	4479	4489	4489	4489	4489	4489	4489
90-	CORD2R	4436	4436	4401	4481	4491	4491	4491	4491	4491	4491
91-	CORD2R	4437	4437	4401	4483	4493	4493	4493	4493	4493	4493
92-	CORD2R	4438	4438	4401	4485	4495	4495	4495	4495	4495	4495
93-	CORD2R	4439	4439	4401	4487	4497	4497	4497	4497	4497	4497
94-	CORD2R	4440	4440	4401	4489	4499	4499	4499	4499	4499	4499
95-	CORD2R	4441	4441	4401	4491	4501	4501	4501	4501	4501	4501
96-	CORD2R	4442	4442	4401	4493	4503	4503	4503	4503	4503	4503
97-	CORD2R	4443	4443	4401	4495	4505	4505	4505	4505	4505	4505
98-	CORD2R	4444	4444	4401	4497	4507	4507	4507	4507	4507	4507
99-	CORD2R	4445	4445	4401	4499	4509	4509	4509	4509	4509	4509
100-	CORD2R	4446	4446	4401	4501	4511	4511	4511	4511	4511	4511

CARD COUNT	1	2	3	4	5	6	7	8	9	10
101-	CRDD	4487	4487	4461	4462					
102-	CRDD	4488	4487	4465	4466					
103-	CRDD	4489	4487	4469	4470					
104-	CSHAR	4431	4431	4401	4402	4404	4403			
105-	CSHAR	4432	4431	4403	4404	4406	4405			
106-	CSHAR	4433	4431	4405	4406	4408	4407			
107-	CSHAR	4434	4431	4407	4408	4410	4409			
108-	CSHAR	4435	4435	4401	4402	4412	4411			
109-	CSHAR	4436	4435	4411	4412	4422	4421			
110-	CSHAR	4437	4435	4421	4422	4432	4431			
111-	CSHAR	4438	4435	4431	4432	4442	4441			
112-	CSHAR	4439	4435	4441	4442	4452	4451			
113-	CSHAR	4440	4435	4451	4452	4462	4461			
114-	CSHAR	4441	4435	4461	4462	4472	4471			
115-	CSHAR	4442	4435	4471	4472	4482	4481			
116-	CSHAR	4443	4435	4481	4482	4492	4491			
117-	CSHAR	4444	4435	4491	4492	4502	4501			
118-	CSHAR	4445	4435	4501	4502	4512	4511			
119-	CSHAR	4446	4435	4511	4512	4522	4521			
120-	CSHAR	4447	4435	4521	4522	4532	4531			
121-	CSHAR	4448	4435	4531	4532	4542	4541			
122-	CSHAR	4449	4435	4541	4542	4552	4551			
123-	CSHAR	4450	4435	4551	4552	4562	4561			
124-	CSHAR	4451	4435	4561	4562	4572	4571			
125-	CSHAR	4452	4435	4571	4572	4582	4581			
126-	FLGR	1	INV	1.0	4000.	30				
127-	FLGR	MAX								
128-	GRID	4400	0	174.1	0	88.5	0			
129-	GRID	4401	0	171.0	-0.84	87.5	0			
130-	GRID	4402	0	171.0	0	87.5	0			
131-	GRID	4403	0	182.1711	-0.54	87.5	0			
132-	GRID	4404	0	182.1711	0	87.5	0			
133-	GRID	4405	0	183.3422	-0.84	87.5	0			
134-	GRID	4406	0	183.3422	0	87.5	0			
135-	GRID	4407	0	185.0711	-0.84	87.5	0			
136-	GRID	4408	0	185.0711	0	87.5	0			
137-	GRID	4409	0	186.8	-0.84	87.5	0			
138-	GRID	4410	0	186.8	0	87.5	0			
139-	GRID	4411	0	179.26	-0.9792	86.0	0			
140-	GRID	4412	0	179.26	0	86.0	0			
141-	GRID	4413	0	180.8001	-0.9792	86.0	0			
142-	GRID	4415	0	182.4762	-0.9792	86.0	0			
143-	GRID	4416	0	182.4762	0	86.0	0			
144-	GRID	4417	0	184.3721	-0.9792	86.0	0			
145-	GRID	4419	0	186.268	-0.9792	86.0	0			
146-	GRID	4420	0	186.268	0	86.0	0			
147-	GRID	4421	0	176.94	-1.1648	84.0	0			
148-	GRID	4422	0	176.94	0	84.0	0			
149-	GRID	4423	0	178.0732	-1.1648	84.0	0			
150-	GRID	4425	0	181.3215	-1.1648	84.0	0			

CARD COUNT		SORTED BULK DATA ECHO									
		1	2	3	4	5	6	7	8	9	10
151-	GRID	4426	0	0	181.3215.0	84.0	0	4416	0	456	
152-	GRID	4427	0	0	183.4400-1.1644	84.0	0	4413	0	456	
153-	GRID	4429	0	0	185.5586-1.1644	84.0	0	4420	0	456	
154-	GRID	4430	0	0	185.5586.0	84.0	0	4420	0	456	
155-	GRID	4431	0	0	174.04 -1.3968	81.5	0	4412	0	456	
156-	GRID	4432	0	0	176.669 -1.3968	81.5	0	4413	0	456	
157-	GRID	4433	0	0	179.6761-1.3968	81.5	0	4416	0	456	
158-	GRID	4435	0	0	179.6761.0	81.5	0	4413	0	456	
159-	GRID	4436	0	0	182.275 -1.3968	81.5	0	4420	0	456	
160-	GRID	4437	0	0	184.6714-1.3968	81.5	0	4420	0	456	
161-	GRID	4439	0	0	171.14 -1.6248	79.0	0	4412	0	456	
162-	GRID	4440	0	0	171.14 .0	79.0	0	4413	0	456	
163-	GRID	4441	0	0	174.4048-1.6248	79.0	0	4416	0	456	
164-	GRID	4442	0	0	176.4347-1.6248	79.0	0	4413	0	456	
165-	GRID	4443	0	0	176.4347.0	79.0	0	4416	0	456	
166-	GRID	4445	0	0	181.1099-1.6248	79.0	0	4413	0	456	
167-	GRID	4446	0	0	183.7451-1.6248	79.0	0	4420	0	456	
168-	GRID	4447	0	0	168.82 .0	77.0	0	4412	0	456	
169-	GRID	4449	0	0	172.5774-1.8144	77.0	0	4413	0	456	
170-	GRID	4450	0	0	177.24 -1.8144	77.0	0	4416	0	456	
171-	GRID	4451	0	0	177.24 .0	77.0	0	4413	0	456	
172-	GRID	4452	0	0	180.1776-1.8144	77.0	0	4420	0	456	
173-	GRID	4453	0	0	183.0757-1.8144	77.0	0	4412	0	456	
174-	GRID	4455	0	0	166.5 -2.0	75.0	0	4413	0	456	
175-	GRID	4456	0	0	170.75 -2.0	75.0	0	4416	0	456	
176-	GRID	4457	0	0	176.1253-2.0	75.0	0	4413	0	456	
177-	GRID	4459	0	0	176.1253.0	75.0	0	4420	0	456	
178-	GRID	4460	0	0	179.2458-2.0	75.0	0	4416	0	456	
179-	GRID	4461	0	0	182.3663-2.0	75.0	0	4413	0	456	
180-	GRID	4462	0	0	182.3663.0	75.0	0	4420	0	456	
181-	GRID	4463	0	0	166.5 -2.0	75.0	0	4416	0	12456	
182-	GRID	4465	0	0	170.75 -2.0	75.0	0	4413	0	12456	
183-	GRID	4466	0	0	176.1253-2.0	75.0	0	4420	0	12456	
184-	GRID	4467	0	0	176.1253.0	75.0	0	4416	0	12456	
185-	GRID	4469	0	0	182.3663-2.0	75.0	0	4413	0	12456	
186-	GRID	4470	0	0	182.3663.0	75.0	0	4420	0	12456	
187-	GRID	4471	0	0	166.5 -2.0	75.0	0	4416	0	12456	
188-	GRID	4472	0	0	170.75 -2.0	75.0	0	4413	0	12456	
189-	GRID	4473	0	0	176.1253-2.0	75.0	0	4420	0	12456	
190-	GRID	4474	0	0	182.3663-2.0	75.0	0	4416	0	12456	
191-	GRID	4475	0	0	182.3663.0	75.0	0	4413	0	12456	
192-	GRID	4476	0	0	166.5 -2.0	75.0	0	4420	0	12456	
193-	GRID	4477	0	0	170.75 -2.0	75.0	0	4416	0	12456	
194-	GRID	4478	0	0	176.1253-2.0	75.0	0	4413	0	12456	
195-	GRID	4479	0	0	182.3663-2.0	75.0	0	4420	0	12456	
196-	GRID	4480	0	0	166.5 -2.0	75.0	0	4416	0	12456	
197-	GRID	4481	0	0	170.75 -2.0	75.0	0	4413	0	12456	
198-	GRID	4482	0	0	176.1253-2.0	75.0	0	4420	0	12456	
199-	GRID	4483	0	0	182.3663-2.0	75.0	0	4416	0	12456	
200-	GRID	4484	0	0	182.3663.0	75.0	0	4413	0	12456	
201-	GRID	4485	0	0	166.5 -2.0	75.0	0	4420	0	12456	
202-	GRID	4486	0	0	170.75 -2.0	75.0	0	4416	0	12456	
203-	GRID	4487	0	0	176.1253-2.0	75.0	0	4413	0	12456	
204-	GRID	4488	0	0	182.3663-2.0	75.0	0	4420	0	12456	
205-	GRID	4489	0	0	166.5 -2.0	75.0	0	4416	0	12456	
206-	GRID	4490	0	0	170.75 -2.0	75.0	0	4413	0	12456	
207-	GRID	4491	0	0	176.1253-2.0	75.0	0	4420	0	12456	
208-	GRID	4492	0	0	182.3663-2.0	75.0	0	4416	0	12456	
209-	GRID	4493	0	0	166.5 -2.0	75.0	0	4413	0	12456	
210-	GRID	4494	0	0	170.75 -2.0	75.0	0	4420	0	12456	
211-	GRID	4495	0	0	176.1253-2.0	75.0	0	4416	0	12456	
212-	GRID	4496	0	0	182.3663-2.0	75.0	0	4413	0	12456	
213-	GRID	4497	0	0	166.5 -2.0	75.0	0	4420	0	12456	
214-	GRID	4498	0	0	170.75 -2.0	75.0	0	4416	0	12456	
215-	GRID	4499	0	0	176.1253-2.0	75.0	0	4413	0	12456	
216-	GRID	4500	0	0	182.3663-2.0	75.0	0	4420	0	12456	
217-	GRID	4501	0	0	166.5 -2.0	75.0	0	4416	0	12456	
218-	GRID	4502	0	0	170.75 -2.0	75.0	0	4413	0	12456	
219-	GRID	4503	0	0	176.1253-2.0	75.0	0	4420	0	12456	
220-	GRID	4504	0	0	182.3663-2.0	75.0	0	4416	0	12456	
221-	GRID	4505	0	0	166.5 -2.0	75.0	0	4413	0	12456	
222-	GRID	4506	0	0	170.75 -2.0	75.0	0	4420	0	12456	
223-	GRID	4507	0	0	176.1253-2.0	75.0	0	4416	0	12456	
224-	GRID	4508	0	0	182.3663-2.0	75.0	0	4413	0	12456	
225-	GRID	4509	0	0	166.5 -2.0	75.0	0	4420	0	12456	
226-	GRID	4510	0	0	170.75 -2.0	75.0	0	4416	0	12456	
227-	GRID	4511	0	0	176.1253-2.0	75.0	0	4413	0	12456	
228-	GRID	4512	0	0	182.3663-2.0	75.0	0	4420	0	12456	
229-	GRID	4513	0	0	166.5 -2.0	75.0	0	4416	0	12456	
230-	GRID	4514	0	0	170.75 -2.0	75.0	0	4413	0	12456	
231-	GRID	4515	0	0	176.1253-2.0	75.0	0	4420	0	12456	
232-	GRID	4516	0	0	182.3663-2.0	75.0	0	4416	0	12456	
233-	GRID	4517	0	0	166.5 -2.0	75.0	0	4413	0	12456	
234-	GRID	4518	0	0	170.75 -2.0	75.0	0	4420	0	12456	
235-	GRID	4519	0	0	176.1253-2.0	75.0	0	4416	0	12456	
236-	GRID	4520	0	0	182.3663-2.0	75.0	0	4413	0	12456	
237-	GRID	4521	0	0	166.5 -2.0	75.0	0	4420	0	12456	
238-	GRID	4522	0	0	170.75 -2.0	75.0	0	4416	0	12456	
239-	GRID	4523	0	0	176.1253-2.0	75.0	0	4413	0	12456	
240-	GRID	4524	0	0	182.3663-2.0	75.0	0	4420	0	12456	
241-	GRID	4525	0	0	166.5 -2.0	75.0	0	4416	0	12456	
242-	GRID	4526	0	0	170.75 -2.0	75.0	0	4413	0	12456	
243-	GRID	4527	0	0	176.1253-2.0	75.0	0	4420	0	12456	
244-	GRID	4528	0	0	182.3663-2.0	75.0	0	4416	0	12456	
245-	GRID	4529	0	0	166.5 -2.0	75.0	0	4413	0	12456	
246-	GRID	4530	0	0	170.75 -2.0	75.0	0	4420	0	12456	
247-	GRID	4531	0	0	176.1253-2.0	75.0	0	4416	0	12456	
248-	GRID	4532	0	0	182.3663-2.0	75.0	0	4413	0	12456	
249-	GRID	4533	0	0	166.5 -2.0	75.0	0	4420	0	12456	
250-	GRID	4534	0	0	170.75 -2.0	75.0	0	4416	0	12456	



CARD COUNT		SORTED BULK DATA ECHO												
		1	2	3	4	5	6	7	8	9	10			
201-	EMCA426A	4449	4425	3	3	1.0	4429	1	-942470		EMCA430A			
202-	MPC	4430	4420	1	3	1.0	4429	1	-942470		EMCA432A			
203-	EMCA430A	4449	4432	1	3	1.0	4431	1	-652040		EMCA436A			
204-	MPC	4449	4431	1	3	1.0	4435	1	-866025		EMCA440A			
205-	EMCA432A	4449	4436	1	3	1.0	4439	1	-942470		EMCA442A			
206-	MPC	4449	4435	1	3	1.0	4441	1	-652940		EMCA446A			
207-	EMCA436A	4449	4440	1	3	1.0	4445	1	-866025		EMCA450A			
208-	MPC	4449	4434	1	3	1.0	4449	1	-652040		EMCA452A			
209-	EMCA440A	4449	4442	1	3	1.0	4451	1	-866025		EMCA456A			
210-	MPC	4449	4441	1	3	1.0	4455	1	-942470		EMCA460A			
211-	EMCA442A	4449	4446	1	3	1.0	4459	1	-652940		EMCA466A			
212-	MPC	4449	4445	1	3	1.0	4461	1	-866025		EMCA470A			
213-	EMCA446A	4449	4444	1	3	1.0	4465	1	-942470		EMCA401X			
214-	MPC	4449	4443	1	3	1.0	4469	1	-0.84		EMCA401Y			
215-	EMCA450A	4449	4449	1	3	1.0	4470	1	-0.84		EMCA401Z			
216-	MPC	4449	4452	1	3	1.0	4471	1	-0.84		EMCA402X			
217-	EMCA452A	4449	4451	1	3	1.0	4472	1	-0.84		EMCA402Y			
218-	MPC	4449	4455	1	3	1.0	4473	1	-0.84		EMCA402Z			
219-	EMCA456A	4449	4455	1	3	1.0	4474	1	-0.84		EMCA403X			
220-	MPC	4449	4460	1	3	1.0	4475	1	-0.84		EMCA403Y			
221-	EMCA460A	4449	4459	1	3	1.0	4476	1	-0.84		EMCA403Z			
222-	MPC	4449	4462	1	3	1.0	4477	1	-0.84		EMCA404X			
223-	EMCA462A	4449	4461	1	3	1.0	4478	1	-0.84		EMCA404Y			
224-	MPC	4449	4465	1	3	1.0	4479	1	-0.84		EMCA404Z			
225-	EMCA466A	4449	4465	1	3	1.0	4480	1	-0.84					
226-	MPC	4449	4470	1	3	1.0	4481	1	-0.84					
227-	EMCA470A	4449	4469	1	3	1.0	4482	1	-0.84					
228-	MPC	4450	4469	1	3	1.0	4483	1	-0.84					
229-	EMCA401X	4450	4469	1	3	1.0	4484	1	-0.84					
230-	MPC	4450	4470	1	3	1.0	4485	1	-0.84					
231-	EMCA401Y	4450	4471	1	3	1.0	4486	1	-0.84					
232-	MPC	4450	4472	1	3	1.0	4487	1	-0.84					
233-	EMCA401Z	4450	4473	1	3	1.0	4488	1	-0.84					
234-	MPC	4450	4474	1	3	1.0	4489	1	-0.84					
235-	EMCA402X	4450	4475	1	3	1.0	4490	1	-0.84					
236-	MPC	4450	4476	1	3	1.0	4491	1	-0.84					
237-	EMCA402Y	4450	4477	1	3	1.0	4492	1	-0.84					
238-	MPC	4450	4478	1	3	1.0	4493	1	-0.84					
239-	EMCA402Z	4450	4479	1	3	1.0	4494	1	-0.84					
240-	MPC	4450	4480	1	3	1.0	4495	1	-0.84					
241-	EMCA403X	4450	4481	1	3	1.0	4496	1	-0.84					
242-	MPC	4450	4482	1	3	1.0	4497	1	-0.84					
243-	EMCA403Y	4450	4483	1	3	1.0	4498	1	-0.84					
244-	MPC	4450	4484	1	3	1.0	4499	1	-0.84					
245-	EMCA403Z	4450	4485	1	3	1.0	4500	1	-0.84					
246-	MPC	4450	4486	1	3	1.0	4501	1	-0.84					
247-	EMCA404X	4450	4487	1	3	1.0	4502	1	-0.84					
248-	MPC	4450	4488	1	3	1.0	4503	1	-0.84					
249-	EMCA404Y	4450	4489	1	3	1.0	4504	1	-0.84					
250-	MPC	4450	4490	1	3	1.0	4505	1	-0.84					

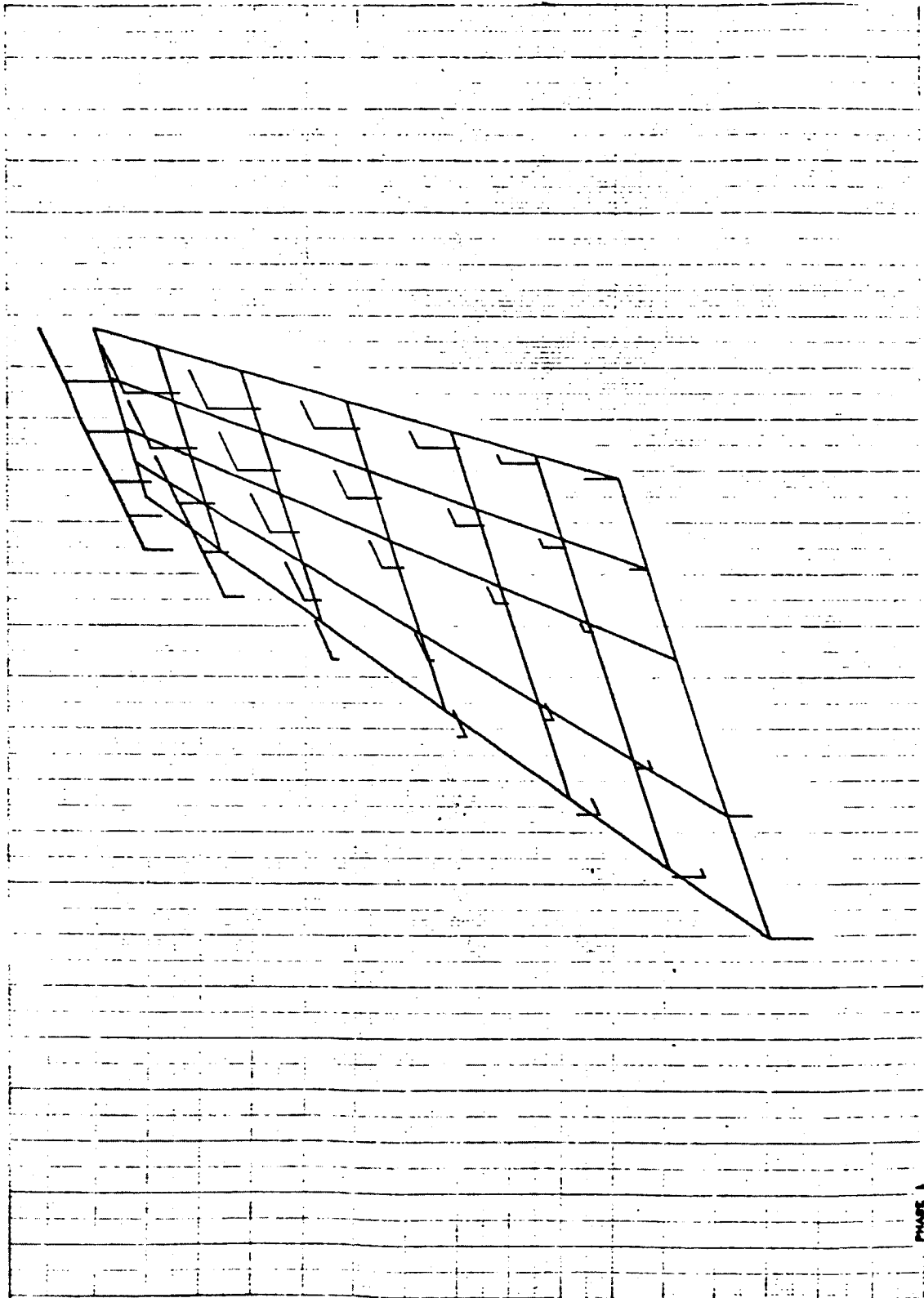
SORTED BULK DATA ECHO											
CARD	1	2	3	4	5	6	7	8	9	10	
COUNT											
251-	EMCA4047	4450	4400	1	1.0	4400	1	5	-1.0289	EMCA405X	
252-	MPC		4405	5	1.0	4400	6	6	-0.84	EMCA405Y	
253-	EMCA405X	4450	4405	2	1.0	4400	2	6	-1.0	EMCA405Z	
254-	MPC		4405	4	1.0	4400	3	5	-0.7578	EMCA406X	
255-	EMCA405Y	4450	4405	3	1.0	4400	1	6	-1.0	EMCA406Y	
256-	MPC		4405	4	1.0	4400	2	6	-0.7578	EMCA406Z	
257-	EMCA405Z	4450	4405	1	1.0	4400	3	5	-1.0	EMCA407X	
258-	MPC		4405	5	1.0	4400	1	6	-0.84	EMCA407Y	
259-	EMCA406X	4450	4406	2	1.0	4400	2	6	-0.711	EMCA407Z	
260-	MPC		4406	4	1.0	4400	3	5	-1.0	EMCA408X	
261-	EMCA406Y	4450	4406	3	1.0	4400	1	6	-0.711	EMCA408Y	
262-	MPC		4406	4	1.0	4400	2	6	-1.0	EMCA408Z	
263-	EMCA406Z	4450	4406	1	1.0	4400	3	5	-0.84	EMCA409X	
264-	MPC		4406	5	1.0	4400	1	6	-0.711	EMCA409Y	
265-	EMCA407X	4450	4407	2	1.0	4400	2	6	-1.0	EMCA409Z	
266-	MPC		4407	4	1.0	4400	3	5	-0.84	EMCA410X	
267-	EMCA407Y	4450	4407	3	1.0	4400	1	6	-1.0	EMCA410Y	
268-	MPC		4407	4	1.0	4400	2	6	-2.7000	EMCA410Z	
269-	EMCA407Z	4450	4407	1	1.0	4400	3	5	-2.7	EMCA4113A	
270-	MPC		4407	5	1.0	4400	1	6	-1.53430	EMCA4113B	
271-	EMCA408X	4450	4408	2	1.0	4400	2	6	-0.497861	EMCA4117A	
272-	MPC		4408	4	1.0	4400	3	5	-2.33525	EMCA4117B	
273-	EMCA408Y	4450	4408	3	1.0	4400	1	6	-2.02450	EMCA423A	
274-	MPC		4408	4	1.0	4400	2	6	-2.02450	EMCA423B	
275-	EMCA408Z	4450	4408	1	1.0	4400	3	5	-0.497861	EMCA423A	
276-	MPC		4408	5	1.0	4400	1	6	-0.497861	EMCA423B	
277-	EMCA409X	4450	4409	2	1.0	4400	2	6	-3.17546	EMCA427A	
278-	MPC		4409	4	1.0	4400	3	5	-0.497861	EMCA427B	
279-	EMCA409Y	4450	4409	3	1.0	4400	1	6	-0.497861	EMCA427C	
280-	MPC		4409	4	1.0	4400	2	6	-0.497861	EMCA427D	
281-	EMCA409Z	4450	4409	1	1.0	4400	3	5	-0.497861	EMCA427E	
282-	MPC		4409	5	1.0	4400	1	6	-0.497861	EMCA427F	
283-	EMCA410X	4450	4410	2	1.0	4400	2	6	-0.497861	EMCA427G	
284-	MPC		4410	4	1.0	4400	3	5	-0.497861	EMCA427H	
285-	EMCA410Y	4450	4410	3	1.0	4400	1	6	-0.497861	EMCA427I	
286-	MPC		4410	4	1.0	4400	2	6	-0.497861	EMCA427J	
287-	EMCA410Z	4450	4410	1	1.0	4400	3	5	-0.497861	EMCA427K	
288-	MPC		4410	5	1.0	4400	1	6	-0.497861	EMCA427L	
289-	EMCA4113A	4450	4411	2	1.0	4400	2	6	-0.497861	EMCA427M	
290-	MPC		4411	4	1.0	4400	3	5	-0.497861	EMCA427N	
291-	EMCA4113B	4450	4411	3	1.0	4400	1	6	-0.497861	EMCA427O	
292-	MPC		4411	4	1.0	4400	2	6	-0.497861	EMCA427P	
293-	EMCA4117A	4450	4411	2	1.0	4400	2	6	-0.497861	EMCA427Q	
294-	MPC		4411	4	1.0	4400	3	5	-0.497861	EMCA427R	
295-	EMCA4117B	4450	4411	3	1.0	4400	1	6	-0.497861	EMCA427S	
296-	MPC		4411	4	1.0	4400	2	6	-0.497861	EMCA427T	
297-	EMCA423A	4450	4411	2	1.0	4400	2	6	-0.497861	EMCA427U	
298-	MPC		4411	4	1.0	4400	3	5	-0.497861	EMCA427V	
299-	EMCA423B	4450	4411	3	1.0	4400	1	6	-0.497861	EMCA427W	
300-	MPC		4411	4	1.0	4400	2	6	-0.497861	EMCA427X	

PHASE 1  
FIN-SYMM WITH SPRINGS

SORTED BULK DATA ECHO									
CARD COUNT	1	2	3	4	5	6	7	8	9
301-	CMCA433A	4431	4431	3	294682	4435	2	-2.63767	9
302-	CMCA433H	4435	4435	3	244775	4435	2	-4.07861	CMCA437A
303-	MPC	4437	4437	2	1.0	4439	2	-4.07861	CMCA437B
304-	CMCA437A	4439	4439	3	0.46201	4439	2	-4.01266	CMCA437C
305-	CMCA437B	4439	4439	3	7.2947	4441	2	-3.25083	CMCA437D
306-	MPC	4441	4441	2	372375	4445	2	-4.07861	CMCA437E
307-	CMCA443A	4445	4445	3	301677	4445	2	-4.07861	CMCA447A
308-	CMCA443H	4445	4445	3	1.0	4449	2	-4.07861	CMCA447B
309-	MPC	4447	4447	2	0.46201	4449	2	-4.68248	CMCA447C
310-	CMCA447A	4449	4449	3	8.46	4451	2	-3.74133	CMCA447D
311-	CMCA447B	4449	4449	3	0.46201	4455	2	-4.07861	CMCA447E
312-	MPC	4451	4451	2	347105	4455	2	-4.07861	CMCA447F
313-	CMCA447C	4455	4455	3	1.0	4459	2	-4.07861	CMCA447G
314-	CMCA447D	4455	4455	2	0.46201	4459	2	-4.07861	CMCA447H
315-	MPC	4457	4457	3	9.6253	4461	2	-4.07861	CMCA447I
316-	CMCA447E	4459	4459	3	0.46201	4465	2	-4.07861	CMCA447J
317-	CMCA447F	4459	4459	2	392713	4465	2	-4.07861	CMCA447K
318-	MPC	4461	4461	3	1.0	4469	2	-4.07861	CMCA447L
319-	CMCA447G	4461	4461	2	0.46201	4469	2	-4.07861	CMCA447M
320-	CMCA447H	4465	4465	3	0.46201	4469	2	-4.07861	CMCA447N
321-	MPC	4467	4467	2	4420	4472	4426	4430	4432
322-	CMCA447I	4469	4469	3	4420	4472	4450	4452	4456
323-	CMCA447J	4469	4469	3	4420	4472	4450	4452	4456
324-	MPCADU	4451	4449	4450	4420	4472	4450	4452	4456
325-	IM11	3	4412	4416	4420	4472	4450	4452	4456
326-	IM11	3	4436	4440	4420	4472	4450	4452	4456
327-	IM11	3	4460	4462	4420	4472	4450	4452	4456
328-	PARAM	GRDPNT	0	4462	4420	4472	4450	4452	4456
329-	PARAM	TPNAME	FINSP1	4462	4420	4472	4450	4452	4456
330-	PARAM	WTMASS	0.02588	4462	4420	4472	4450	4452	4456
331-	PARAM	4401	4400	4400	4420	4472	4450	4452	4456
332-	PARAM	4461	4401	4401	4420	4472	4450	4452	4456
333-	PARAM	4472	4401	4401	4420	4472	4450	4452	4456
334-	PARAM	4472	4401	4401	4420	4472	4450	4452	4456
335-	PARAM	4431	4400	4400	4420	4472	4450	4452	4456
336-	PARAM	4435	4400	4400	4420	4472	4450	4452	4456
337-	SPC	4401	4400	4400	4420	4472	4450	4452	4456
338-	SPC	4402	4400	4400	4420	4472	4450	4452	4456
339-	SPC	4401	4400	4400	4420	4472	4450	4452	4456
340-	SPS1	4432	4436	4440	4416	4420	4422	4426	4430
341-	SPS2	4460	4462	4466	4470	4420	4422	4426	4430
342-	SPC1	4402	4412	4416	4416	4420	4422	4426	4430
343-	SPA1	4432	4436	4440	4442	4446	4450	4452	4456
344-	SPAP2	4460	4462	4466	4470	4465	4472	4476	4480
345-	SUPNT	4461	12	4463	1	4465	12	4467	1
346-	SUPNT	4469	12	4471	3	4472	3	4473	3
347-	EMDDATA	4469	12	4471	3	4472	3	4473	3

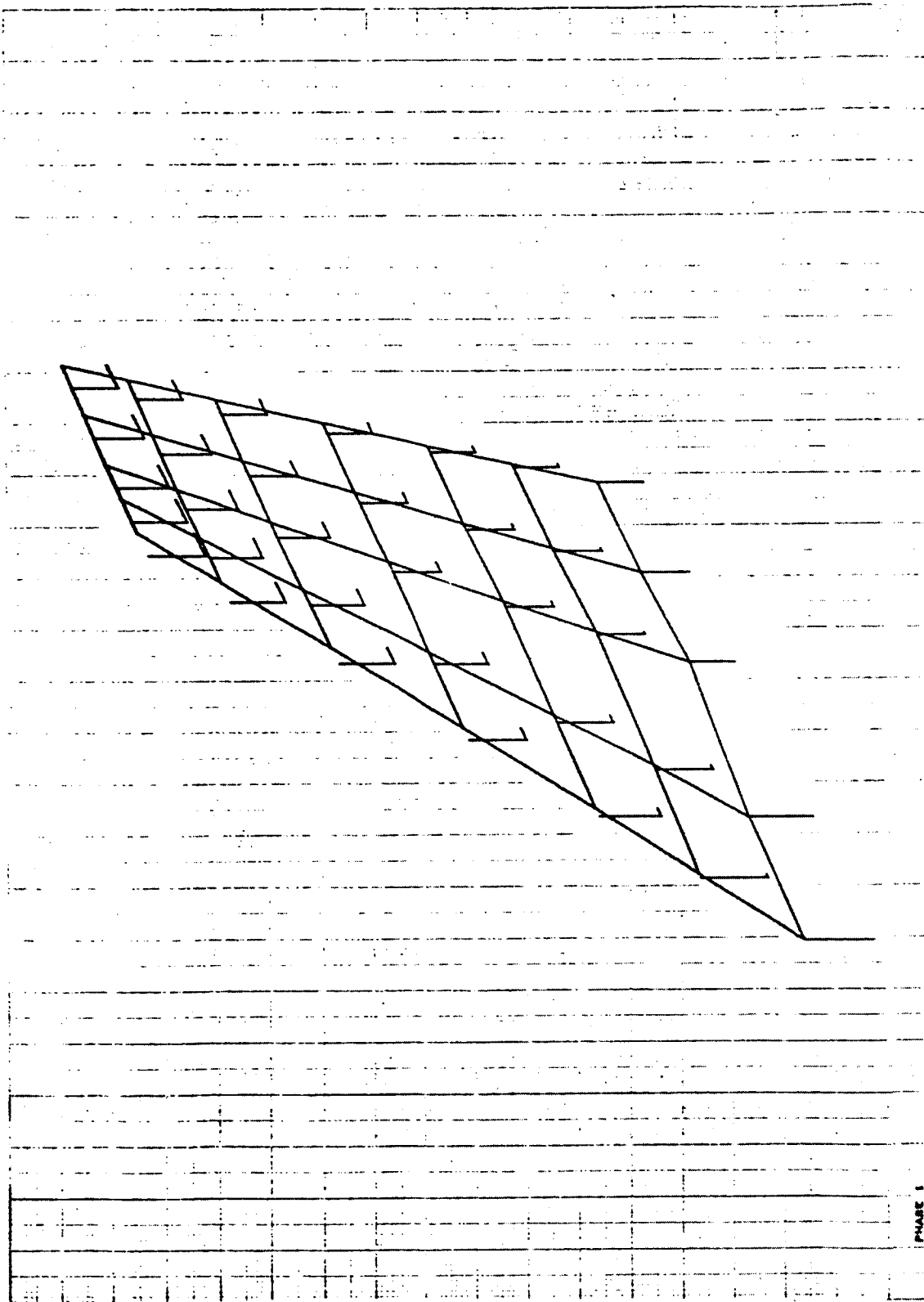
**Appendix B10**  
**PLOTS OF SYMMETRIC COMPONENT MODES/PHASE I ANALYSIS**  
**MODEL II FIN**

10/10/74 1001-007, 1.00000000



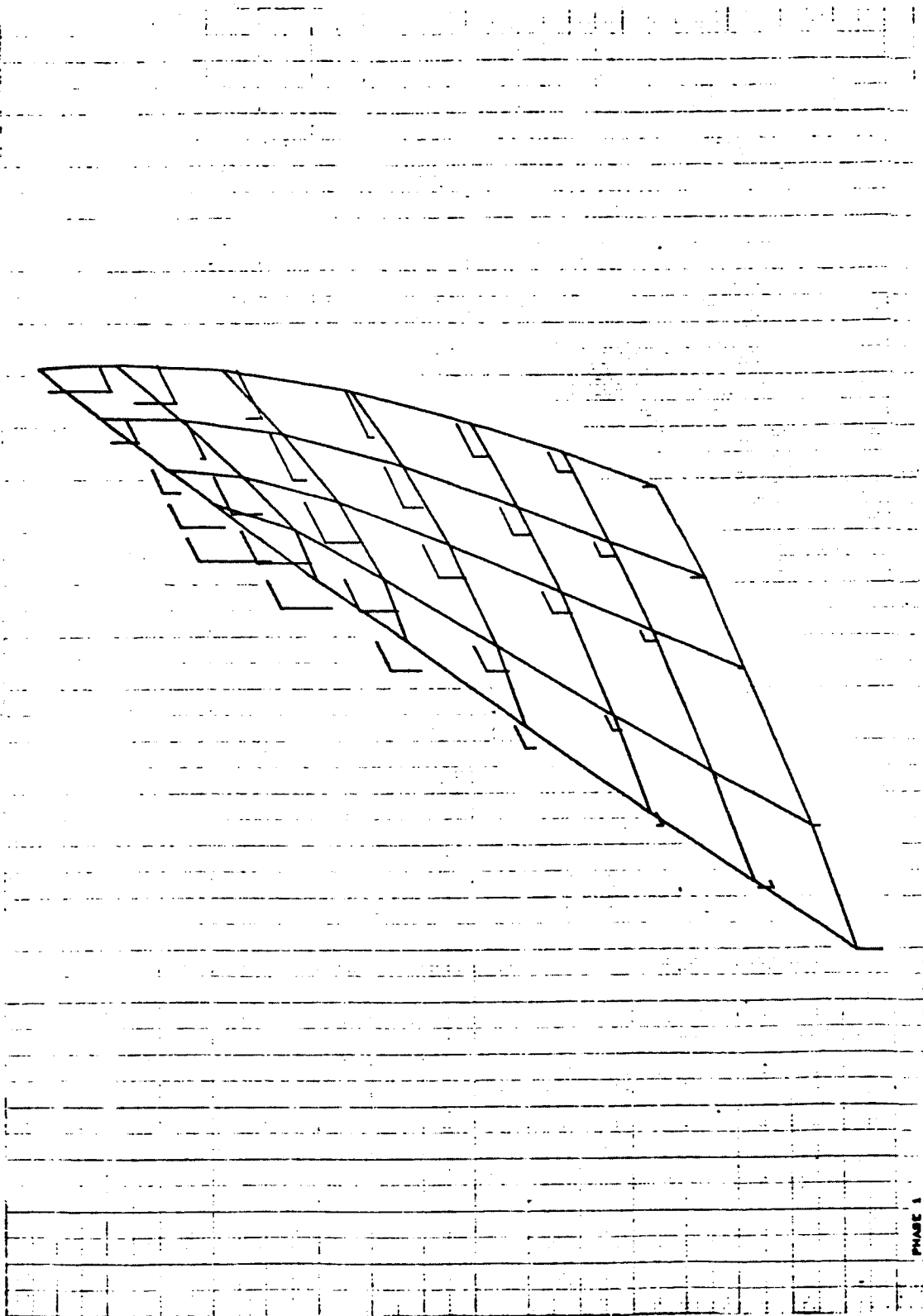
PHASE 1  
FIN-SYM (WITH SPRINGS)  
FREE MODES FIXED AT INTERFACE  
MODAL DEFOR, SUBCASE 1 MODE 1 FREQ. 71.89192

10/10/74 MM-207, 1.0115000



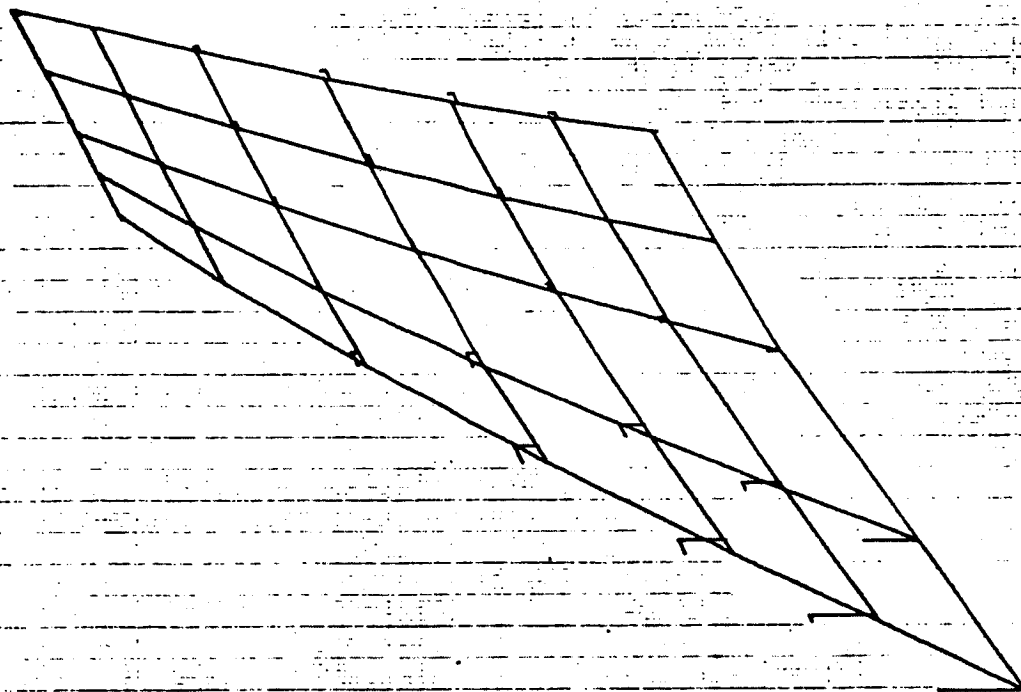
PHASE 1  
FIN-8YAM (WITH SPRINGS)  
PREC MODES FIXED AT INTERFACE  
MODAL DEFOR. SUBCASE 2 MODE 2 FREQ. 420.1484

18/10/74 MM-DEF. = 1.2182780



PHASE 1  
FIN-SYM (WITH SPRINGS)  
FREE MODES FIXED AT INTERFACE  
MODAL DEFOR. SUBCASE 3 MODE 3 FREQ. 1281.477

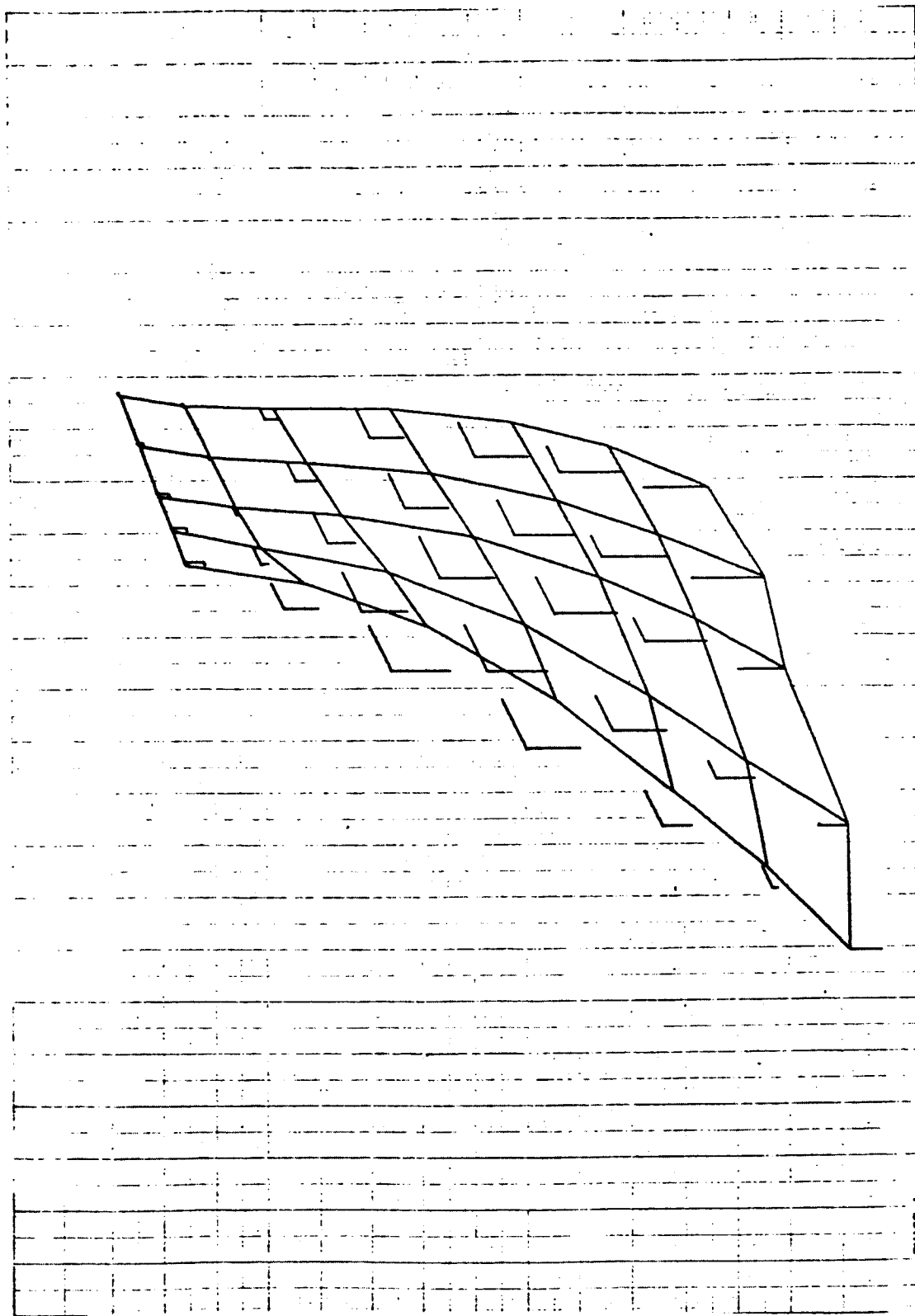
4 10/10/74 MAX-027, 0 1.00000000



PHASE 1  
FIN-SPRING WITH SPRINGS  
FREE MODES FINES AT INTERFACE  
MODAL DEFOR. SURFACE 4 MODE 4 FREQ. 1000.002

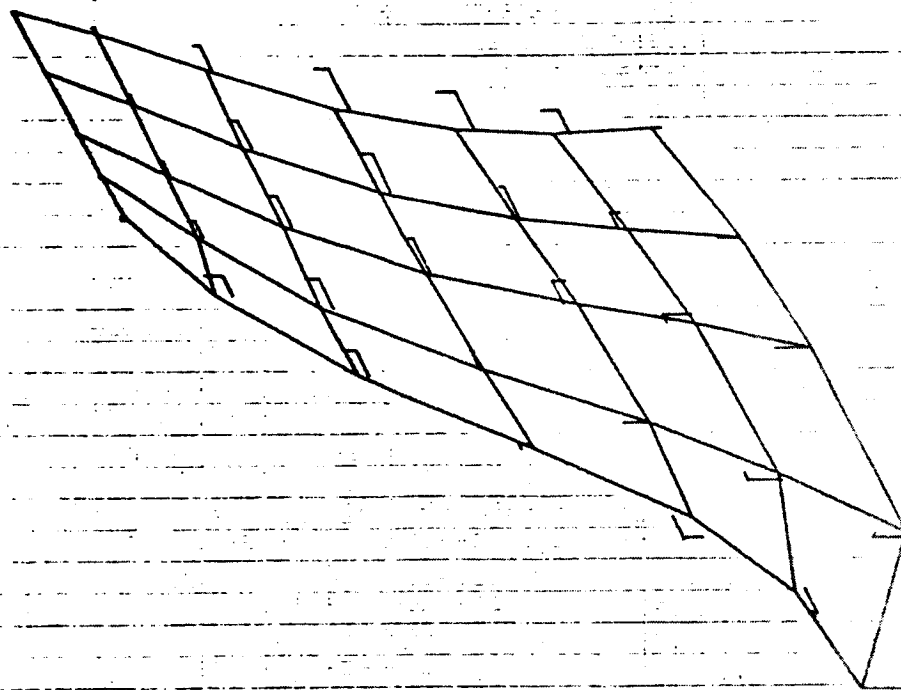


10/10/74 MAN-807. = 1.0028420



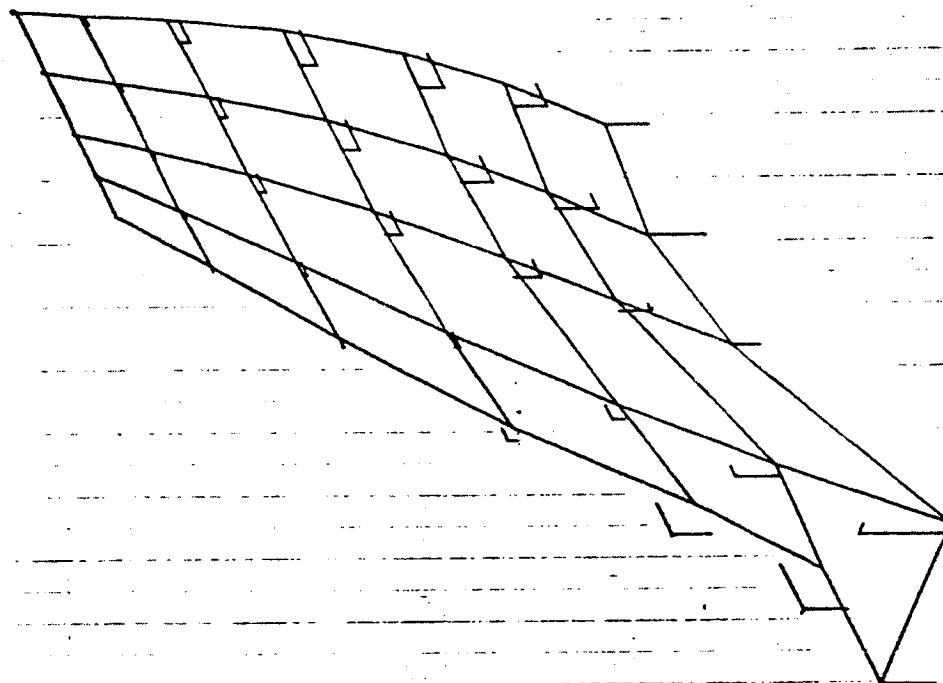
PHASE 1  
 PIN-8700 (WITH SPRINGS)  
 FREE MODES FIXED AT INTERFACE  
 MODAL ORDER, SUBCASE 8 MODE 8 FREQ. 2487.848

10/10/74 1001-007, 0 1.00000000



PHASE 1  
PIN-SYMM WITH SPRINGS  
FREE MODES FIXED AT INTERFACE  
MODAL DEFOR. BURCASE 6 MODE 6 FREQ 1007.141

10/10/74 MAX-REF. = 0.99148808



PHASE 1  
FIN-SYMS (WITH SPRINGS)  
FREE MODES FIXED AT INTERFACE  
MODAL DEFON, SUBCASE 1 MODE 1 FREQ. 4289.934

**Appendix B11**  
**INPUT BULK DATA/PHASE I ANALYSIS: MODEL II**  
**PAYLOAD**

CARD		C A S F		C O N T R O L		D E C K		E C H O	
C O U N T		T I T L E		#		P H A S E			
1	2	SUBTITLE		#		ORBITER PAYLOAD.SYMM CASE WITH SUPPORT SPRINGS			
3	4	MPC		#		4R91			
5	6	SPC		#		4R91			
7	8	METHOD		#		1			
9	10	VECTOR		#		ALL			
11	12	SUBCASE		#		1			
13	14	LANFL		#		20			
15	16	MODES		#		20			
17	18	OUTPUT		#		1			
19	20	SET 1		#		ALL			
21	22	PLOTTER		#		CALCOMP 765.105			
23	24	AXIS		#		MY.X.7			
25	26	VIEW		#		30.0.20.0.0.0			
27	28	MAXIMUM DEFORMATION		#		5.0			
29	30	FIND SCAL		#		ORIGIN 2.SET 1			
31	32	PLOT MODAL DEFORMATION		#		1 THRU 20.SET 1			
33	34	BEGIN BULK		#					

\*\*\* USER INFORMATION MESSAGE 207. BULK DATA NOT SORTED.XSORT WILL RE-ORDER DECK.

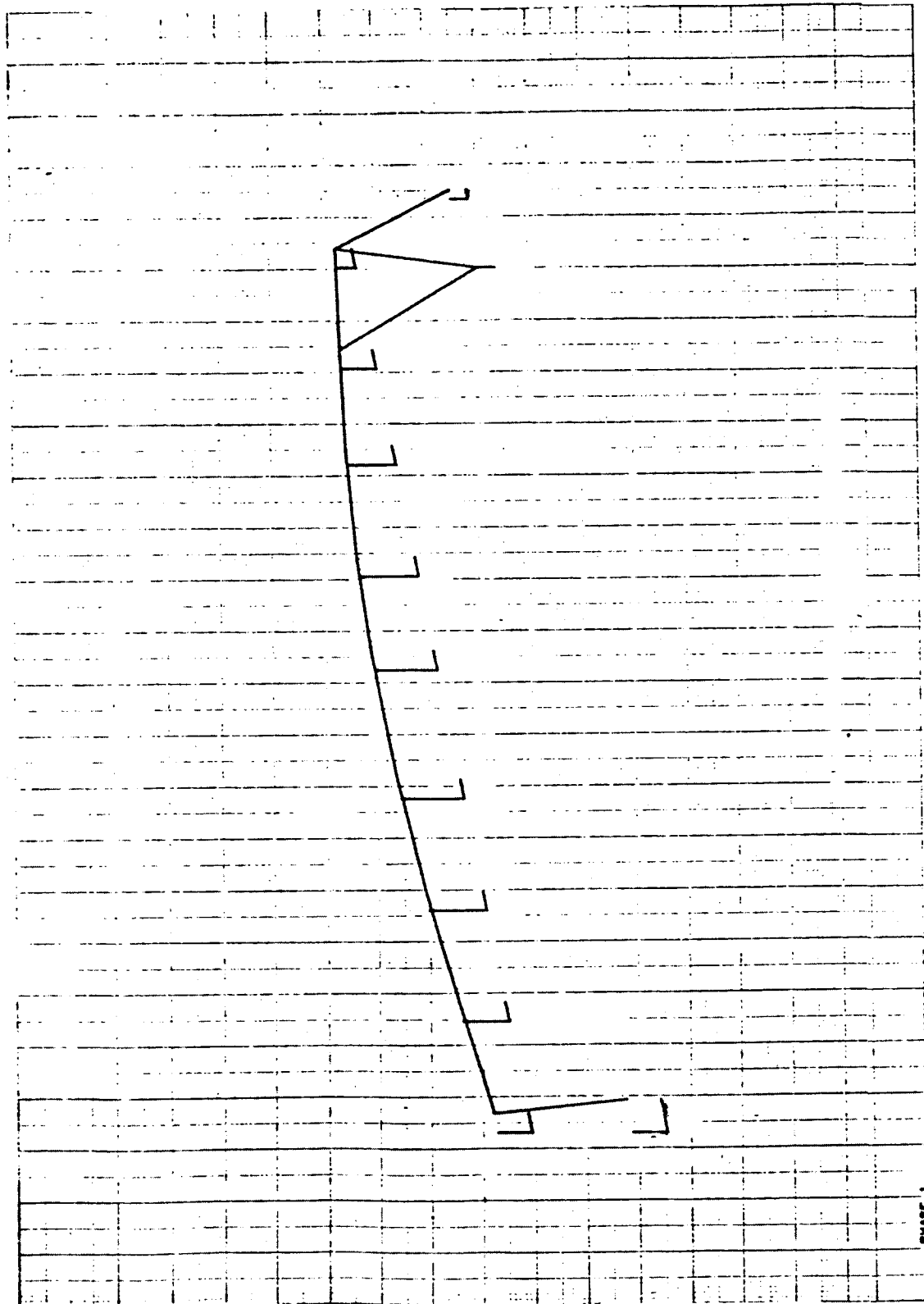
SORTED BULK DATA ECHO										
CARD COUNT	1	2	3	4	5	6	7	8	9	10
1-	CHAR	4882	4882	4882	4883	4883	4883	4883	4883	4883
2-	CHAR	4883	4882	4883	4884	4884	4884	4884	4884	4884
3-	CHAR	4884	4882	4884	4885	4885	4885	4885	4885	4885
4-	CHAR	4885	4882	4885	4886	4886	4886	4886	4886	4886
5-	CHAR	4886	4882	4886	4887	4887	4887	4887	4887	4887
6-	CHAR	4887	4882	4887	4888	4888	4888	4888	4888	4888
7-	CHAR	4888	4882	4888	4889	4889	4889	4889	4889	4889
8-	CHAR	4889	4882	4889	4890	4890	4890	4890	4890	4890
9-	CHAR	4890	4882	4890	4891	4891	4891	4891	4891	4891
10-	CHAR	4891	4882	4891	4892	4892	4892	4892	4892	4892
11-	CHAR	4892	4882	4892	4893	4893	4893	4893	4893	4893
12-	CHAR	4893	4882	4893	4894	4894	4894	4894	4894	4894
13-	CHAR	4894	4882	4894	4895	4895	4895	4895	4895	4895
14-	CHAR	4895	4882	4895	4896	4896	4896	4896	4896	4896
15-	CHAR	4896	4882	4896	4897	4897	4897	4897	4897	4897
16-	CHAR	4897	4882	4897	4898	4898	4898	4898	4898	4898
17-	CHAR	4898	4882	4898	4899	4899	4899	4899	4899	4899
18-	CHAR	4899	4882	4899	4900	4900	4900	4900	4900	4900
19-	CHAR	4900	4882	4900	4901	4901	4901	4901	4901	4901
20-	CHAR	4901	4882	4901	4902	4902	4902	4902	4902	4902
21-	CHAR	4902	4882	4902	4903	4903	4903	4903	4903	4903
22-	CHAR	4903	4882	4903	4904	4904	4904	4904	4904	4904
23-	CHAR	4904	4882	4904	4905	4905	4905	4905	4905	4905
24-	CHAR	4905	4882	4905	4906	4906	4906	4906	4906	4906
25-	CHAR	4906	4882	4906	4907	4907	4907	4907	4907	4907
26-	CHAR	4907	4882	4907	4908	4908	4908	4908	4908	4908
27-	CHAR	4908	4882	4908	4909	4909	4909	4909	4909	4909
28-	CHAR	4909	4882	4909	4910	4910	4910	4910	4910	4910
29-	CHAR	4910	4882	4910	4911	4911	4911	4911	4911	4911
30-	CHAR	4911	4882	4911	4912	4912	4912	4912	4912	4912
31-	CHAR	4912	4882	4912	4913	4913	4913	4913	4913	4913
32-	CHAR	4913	4882	4913	4914	4914	4914	4914	4914	4914
33-	CHAR	4914	4882	4914	4915	4915	4915	4915	4915	4915
34-	CHAR	4915	4882	4915	4916	4916	4916	4916	4916	4916
35-	CHAR	4916	4882	4916	4917	4917	4917	4917	4917	4917
36-	CHAR	4917	4882	4917	4918	4918	4918	4918	4918	4918
37-	CHAR	4918	4882	4918	4919	4919	4919	4919	4919	4919
38-	CHAR	4919	4882	4919	4920	4920	4920	4920	4920	4920
39-	CHAR	4920	4882	4920	4921	4921	4921	4921	4921	4921
40-	CHAR	4921	4882	4921	4922	4922	4922	4922	4922	4922
41-	CHAR	4922	4882	4922	4923	4923	4923	4923	4923	4923
42-	CHAR	4923	4882	4923	4924	4924	4924	4924	4924	4924
43-	CHAR	4924	4882	4924	4925	4925	4925	4925	4925	4925
44-	CHAR	4925	4882	4925	4926	4926	4926	4926	4926	4926
45-	CHAR	4926	4882	4926	4927	4927	4927	4927	4927	4927
46-	CHAR	4927	4882	4927	4928	4928	4928	4928	4928	4928
47-	CHAR	4928	4882	4928	4929	4929	4929	4929	4929	4929
48-	CHAR	4929	4882	4929	4930	4930	4930	4930	4930	4930
49-	CHAR	4930	4882	4930	4931	4931	4931	4931	4931	4931
50-	CHAR	4931	4882	4931	4932	4932	4932	4932	4932	4932
51-	CHAR	4932	4882	4932	4933	4933	4933	4933	4933	4933
52-	CHAR	4933	4882	4933	4934	4934	4934	4934	4934	4934
53-	CHAR	4934	4882	4934	4935	4935	4935	4935	4935	4935
54-	CHAR	4935	4882	4935	4936	4936	4936	4936	4936	4936
55-	CHAR	4936	4882	4936	4937	4937	4937	4937	4937	4937
56-	CHAR	4937	4882	4937	4938	4938	4938	4938	4938	4938
57-	CHAR	4938	4882	4938	4939	4939	4939	4939	4939	4939
58-	CHAR	4939	4882	4939	4940	4940	4940	4940	4940	4940
59-	CHAR	4940	4882	4940	4941	4941	4941	4941	4941	4941
60-	CHAR	4941	4882	4941	4942	4942	4942	4942	4942	4942
61-	CHAR	4942	4882	4942	4943	4943	4943	4943	4943	4943
62-	CHAR	4943	4882	4943	4944	4944	4944	4944	4944	4944
63-	CHAR	4944	4882	4944	4945	4945	4945	4945	4945	4945
64-	CHAR	4945	4882	4945	4946	4946	4946	4946	4946	4946
65-	CHAR	4946	4882	4946	4947	4947	4947	4947	4947	4947
66-	CHAR	4947	4882	4947	4948	4948	4948	4948	4948	4948
67-	CHAR	4948	4882	4948	4949	4949	4949	4949	4949	4949
68-	CHAR	4949	4882	4949	4950	4950	4950	4950	4950	4950
69-	CHAR	4950	4882	4950	4951	4951	4951	4951	4951	4951
70-	CHAR	4951	4882	4951	4952	4952	4952	4952	4952	4952
71-	CHAR	4952	4882	4952	4953	4953	4953	4953	4953	4953
72-	CHAR	4953	4882	4953	4954	4954	4954	4954	4954	4954
73-	CHAR	4954	4882	4954	4955	4955	4955	4955	4955	4955
74-	CHAR	4955	4882	4955	4956	4956	4956	4956	4956	4956
75-	CHAR	4956	4882	4956	4957	4957	4957	4957	4957	4957
76-	CHAR	4957	4882	4957	4958	4958	4958	4958	4958	4958
77-	CHAR	4958	4882	4958	4959	4959	4959	4959	4959	4959
78-	CHAR	4959	4882	4959	4960	4960	4960	4960	4960	4960
79-	CHAR	4960	4882	4960	4961	4961	4961	4961	4961	4961
80-	CHAR	4961	4882	4961	4962	4962	4962	4962	4962	4962
81-	CHAR	4962	4882	4962	4963	4963	4963	4963	4963	4963
82-	CHAR	4963	4882	4963	4964	4964	4964	4964	4964	4964
83-	CHAR	4964	4882	4964	4965	4965	4965	4965	4965	4965
84-	CHAR	4965	4882	4965	4966	4966	4966	4966	4966	4966
85-	CHAR	4966	4882	4966	4967	4967	4967	4967	4967	4967
86-	CHAR	4967	4882	4967	4968	4968	4968	4968	4968	4968
87-	CHAR	4968	4882	4968	4969	4969	4969	4969	4969	4969
88-	CHAR	4969	4882	4969	4970	4970	4970	4970	4970	4970
89-	CHAR	4970	4882	4970	4971	4971	4971	4971	4971	4971
90-	CHAR	4971	4882	4971	4972	4972	4972	4972	4972	4972
91-	CHAR	4972	4882	4972	4973	4973	4973	4973	4973	4973
92-	CHAR	4973	4882	4973	4974	4974	4974	4974	4974	4974
93-	CHAR	4974	4882	4974	4975	4975	4975	4975	4975	4975
94-	CHAR	4975	4882	4975	4976	4976	4976	4976	4976	4976
95-	CHAR	4976	4882	4976	4977	4977	4977	4977	4977	4977
96-	CHAR	4977	4882	4977	4978	4978	4978	4978	4978	4978
97-	CHAR	4978	4882	4978	4979	4979	4979	4979	4979	4979
98-	CHAR	4979	4882	4979	4980	4980	4980	4980	4980	4980
99-	CHAR	4980	4882	4980	4981	4981	4981	4981	4981	4981
100-	CHAR	4981	4882	4981	4982	4982	4982	4982	4982	4982
101-	CHAR	4982	4882	4982	4983	4983	4983	4983	4983	4983
102-	CHAR	4983	4882	4983	4984	4984	4984	4984	4984	4984
103-	CHAR	4984	4882	4984	4985	4985	4985	4985	4985	4985
104-	CHAR	4985	4882	4985	4986	4986	4986	4986	4986	4986
105-	CHAR	4986	4882	4986	4987	4987	4987	4987	4987	4987
106-	CHAR	4987	4882	4987	4988	4988	4988	4988	4988	4988
107-	CHAR	4988	4882	4988	4989	4989	4989	4989	4989	4989
108-	CHAR	4989	4882	4989	4990	4990	4990	4990	4990	4990
109-	CHAR	4990	4882	4990	4991	4991	4991	4991	4991	4991
110-	CHAR	4991	4882	4991	4992	4992	4992	4992	4992	4992
111-	CHAR	4992	4882	4992	4993	4993	4993	4993	4993	4993
112-	CHAR	4993	4882	4993	4994	4994	4994	4994	4994	4994
113-	CHAR	4994	4882	4994	4995	4995	4995	4995	4995	4995
114-	CHAR	4995	4882	4995	4996	4996	4996	4996	4996	4996
115-	CHAR	4996	4882	4996	4997	4997	4997	4997	4997	4997
116-	CHAR	4997	4882	4997	4998	4998	4998	4998	4998	4998
117-	CHAR	4998	4882	4998	4999	4999	4999	4999	4999	4999
118-	CHAR	4999	4882	4999	5000	5000	5000	5000	5000	5000
119-	CHAR	5000	4882	5000	5001	5001	5001	5001	5001	5001
120-	CHAR	5001	4882	5001	5002	5002	5002	5002	5002	5002
121-	CHAR	5002	4882	5002	5003	5003	5003	5003	5003	5003
122-	CHAR	5003	4882	5003	5004	5004	5004	5004	5004	5004
123-	CHAR	5004	4882	5004	5005	5005	5005	5005	5005	5005
124-	CHAR	5005	4882	5005	5006	5006	5006	5006	5006	5006
125-	CHAR	5006	4882	5006	5007	5007	5007	5007	5007	5007
126-	CHAR	500								

CARD COUNT	1	2	3	4	5	6	7	8	9	10
51-	MPC	4891	4892	3	1.0	4891	3	-1.0		
52-	MPC	4891	4891	1	1.0	4890	1	-1.0		
53-	MPC	4891	4891	3	1.0	4890	1	-1.0		
54-	MPC	4891	4891	3	1.0	4890	1	-1.0		
55-	MPC	4891	4891	5	1.0	4890	1	-1.0		
56-	MPC	4891	4891	3	1.0	4891	3	-1.0		
57-	MPC	4891	4891	5	1.0	4890	1	-1.0		
58-	MPC	4891	4891	3	1.0	4890	1	-1.0		
59-	MPC	4891	4891	3	1.0	4890	1	-1.0		
60-	MPC	4891	4891	3	1.0	4890	1	-1.0		
61-	MPC	4891	4891	3	1.0	4890	1	-1.0		
62-	MPC	4891	4891	3	1.0	4890	1	-1.0		
63-	MPC	4891	4891	3	1.0	4890	1	-1.0		
64-	MPC	4891	4891	3	1.0	4890	1	-1.0		
65-	MPC	4891	4891	3	1.0	4890	1	-1.0		
66-	MPC	4891	4891	3	1.0	4890	1	-1.0		
67-	MPC	4891	4891	3	1.0	4890	1	-1.0		
68-	MPC	4891	4891	3	1.0	4890	1	-1.0		
69-	MPC	4891	4891	3	1.0	4890	1	-1.0		
70-	MPC	4891	4891	3	1.0	4890	1	-1.0		
71-	MPC	4891	4891	3	1.0	4890	1	-1.0		
72-	MPC	4891	4891	3	1.0	4890	1	-1.0		
73-	MPC	4891	4891	3	1.0	4890	1	-1.0		
74-	MPC	4891	4891	3	1.0	4890	1	-1.0		
75-	MPC	4891	4891	3	1.0	4890	1	-1.0		
76-	MPC	4891	4891	3	1.0	4890	1	-1.0		

**Appendix B12**  
**PLOTS OF SYMMETRIC COMPONENT MODES/PHASE I ANALYSIS**  
**MODEL II PAYLOAD**

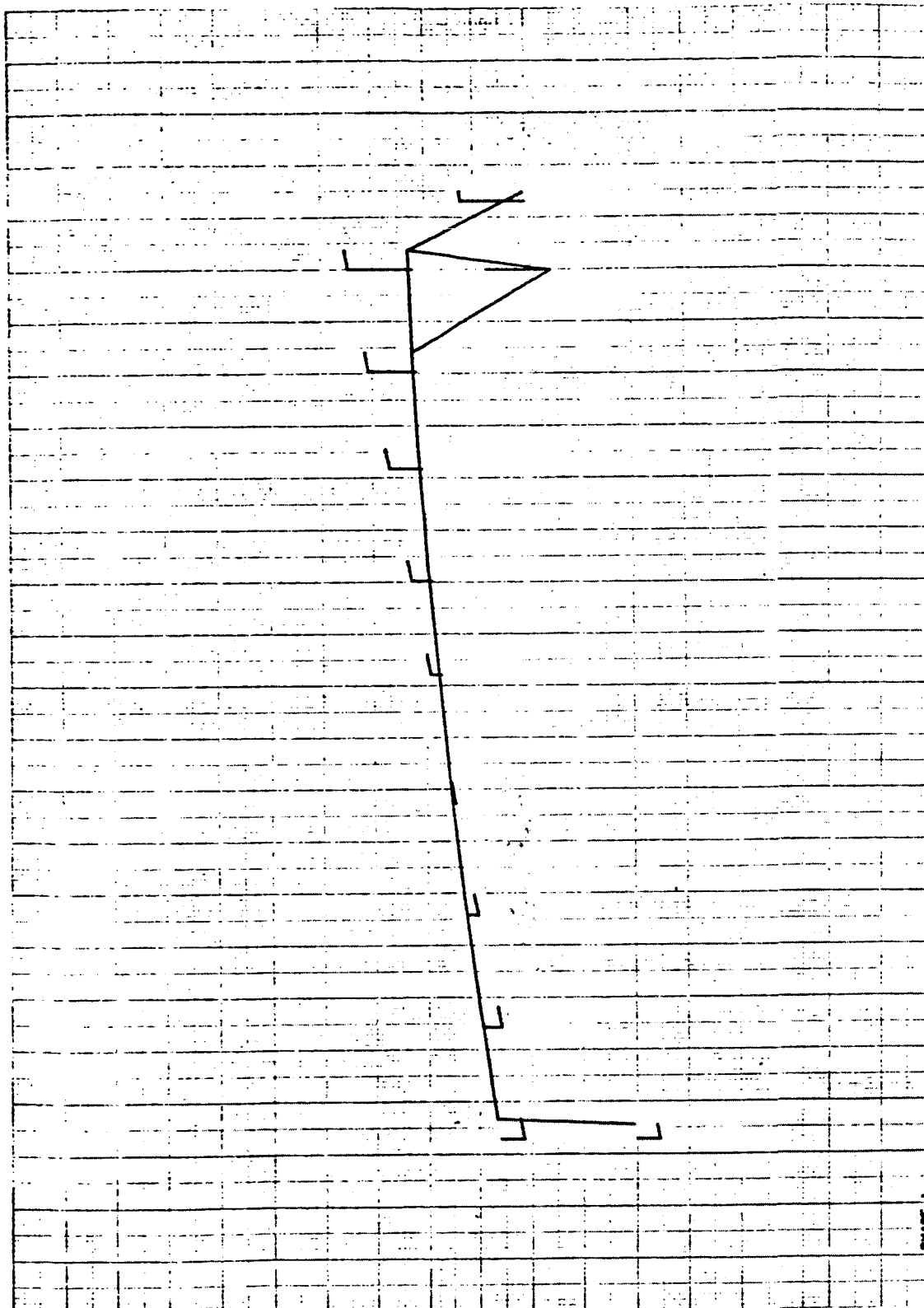


5/24/74 AMX-827, = 1.00000000



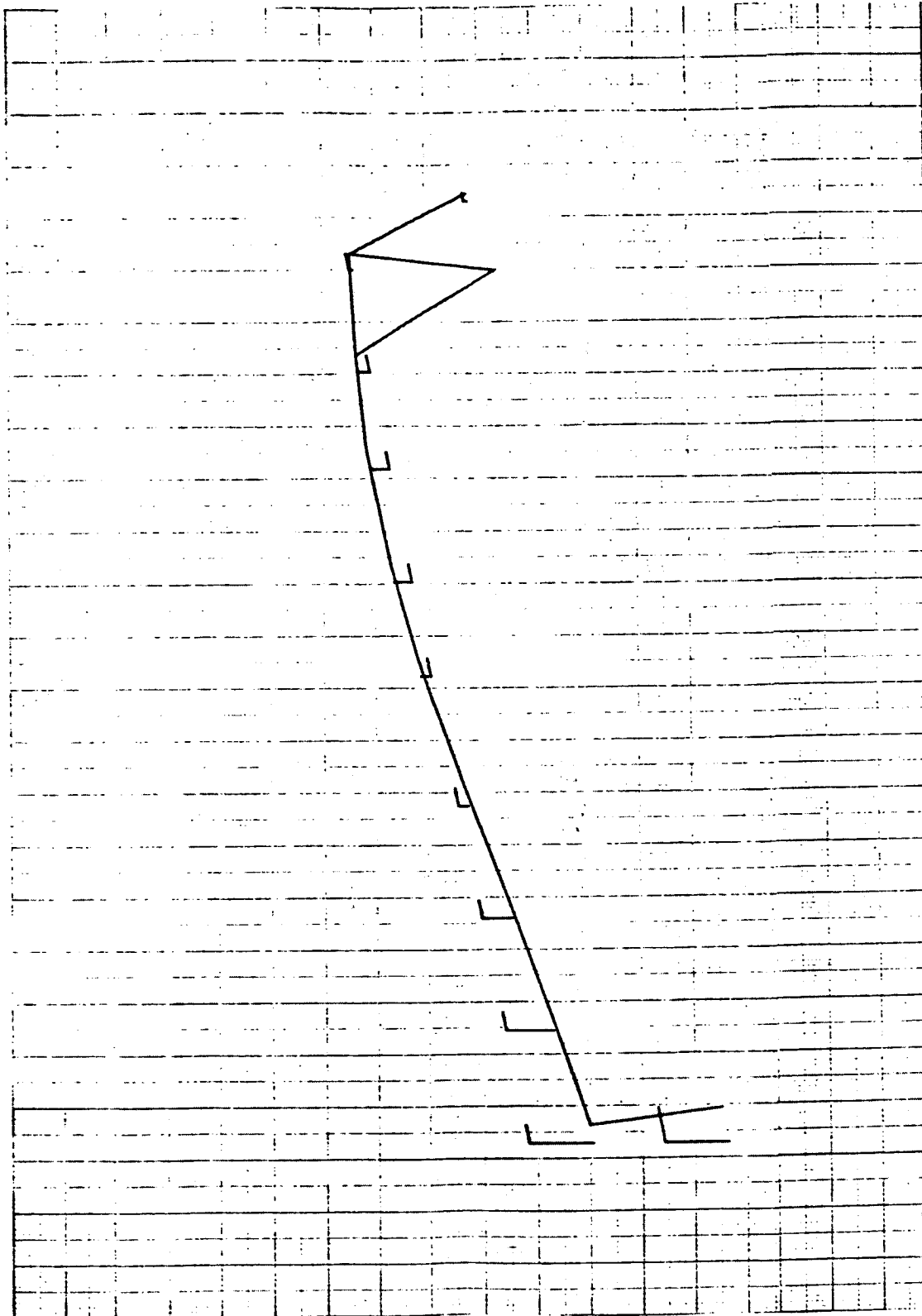
PHASE 1  
 OR (1) TER PAYLOAD, SYMM GARE WITH SUPPORT SPRINGS  
 FREE MODES FIXED AT INTERFACE  
 MODAL ORDER, SUBCASE 1 MODE 1 FREQ. 64.3812

9/24/74 1000-007, 0 1.00000000



PHASE 1  
ORBITER PAYLOAD SYSTEMS BASE WITH SUPPORT SPR (1000)  
FREE MODES FIRED AT INTERFACE  
NAVAL DUTY, SUBCARE 2 MODE 2 FREQ, 121.2311

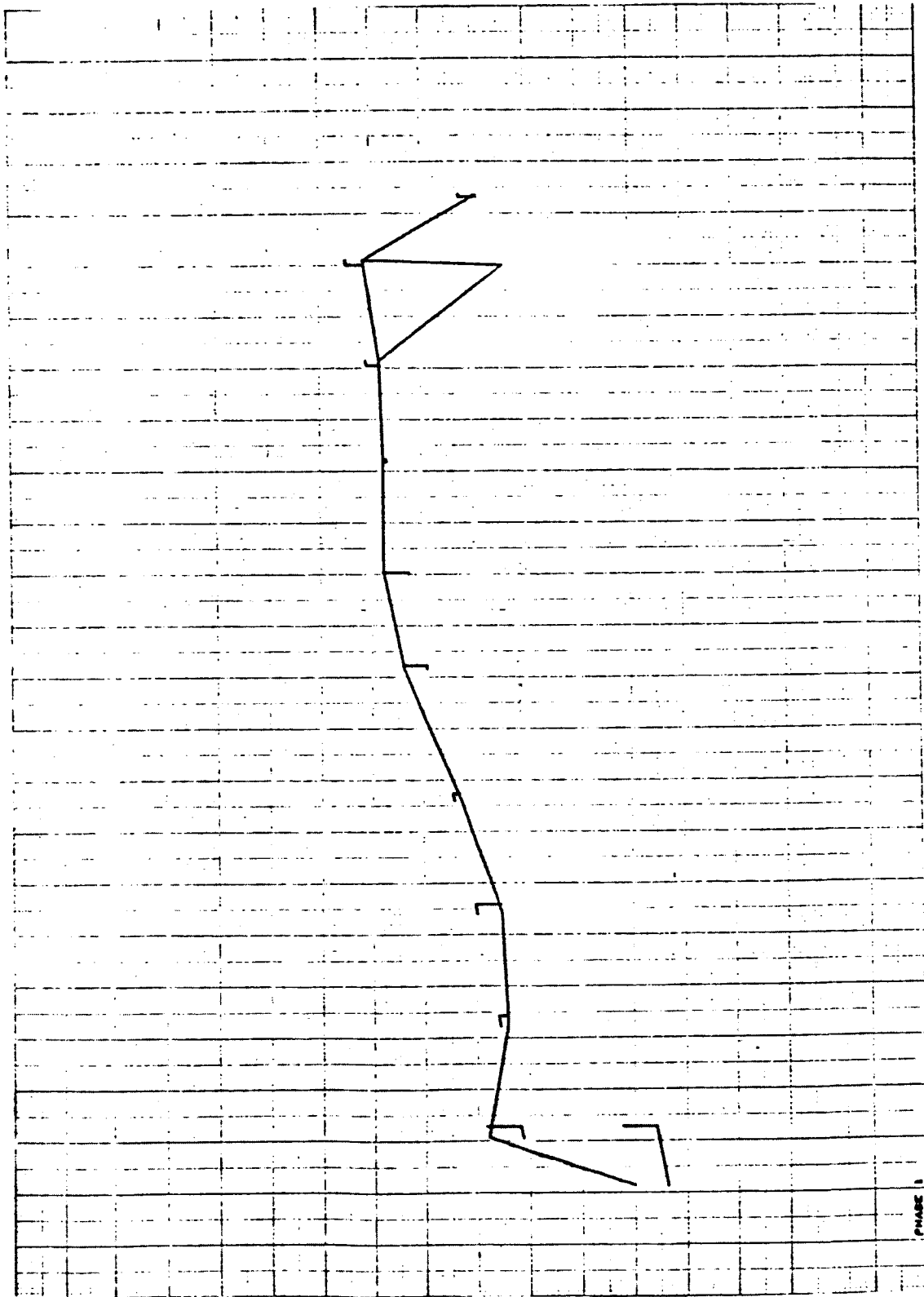
9/24/74 MAN-007, s 1.00000000



PHASE 1  
ORBITER PAYLOAD, STAM BASE WITH SUPPORT SPRINGS  
FREE MODES PLOTTED AT INTERFACE  
MODAL ORDER, SUBCASE 3 MODE 3 FREQ. 189.3422

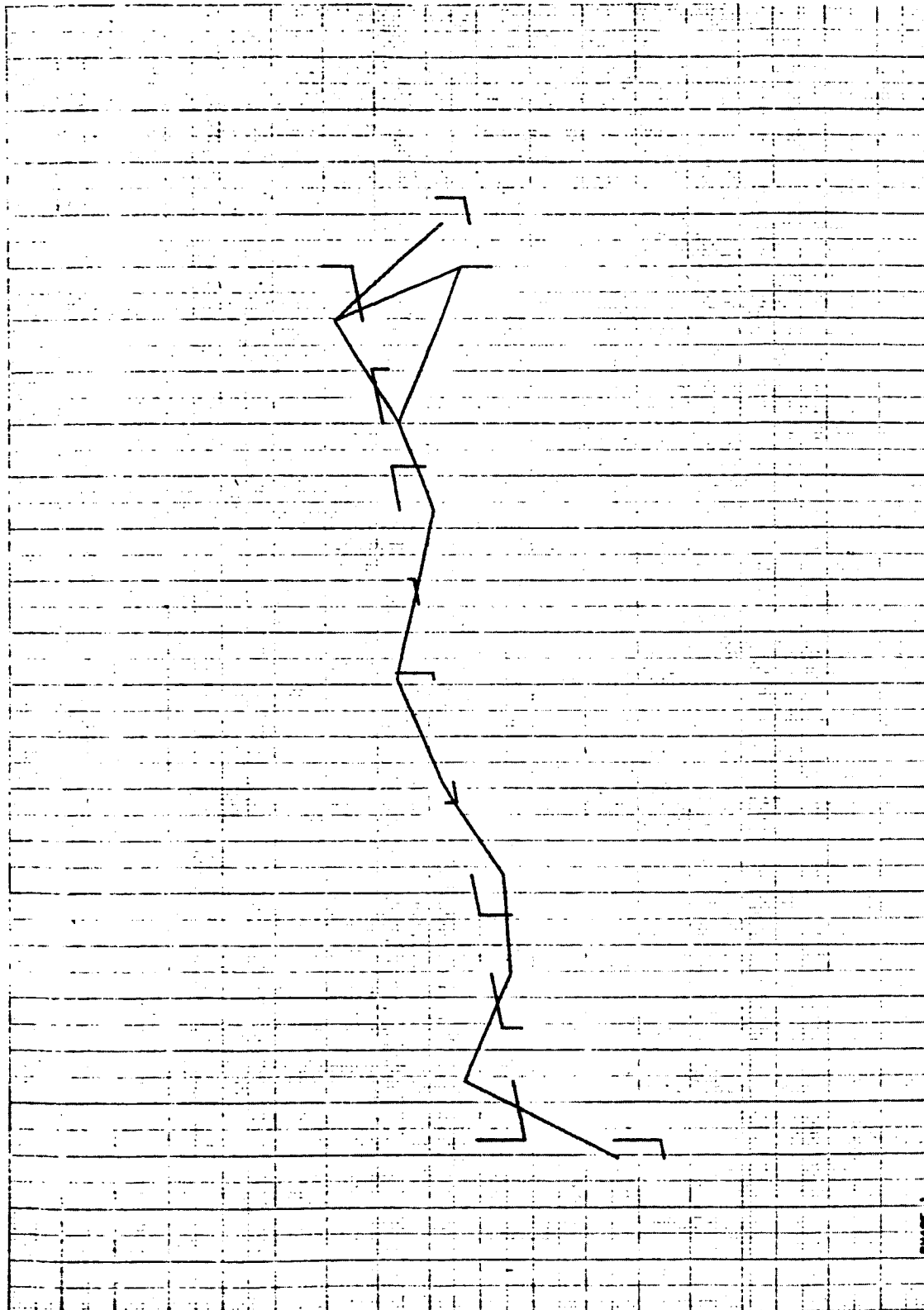


0 0.001/74 MAX-DEF. = 1.000E-100



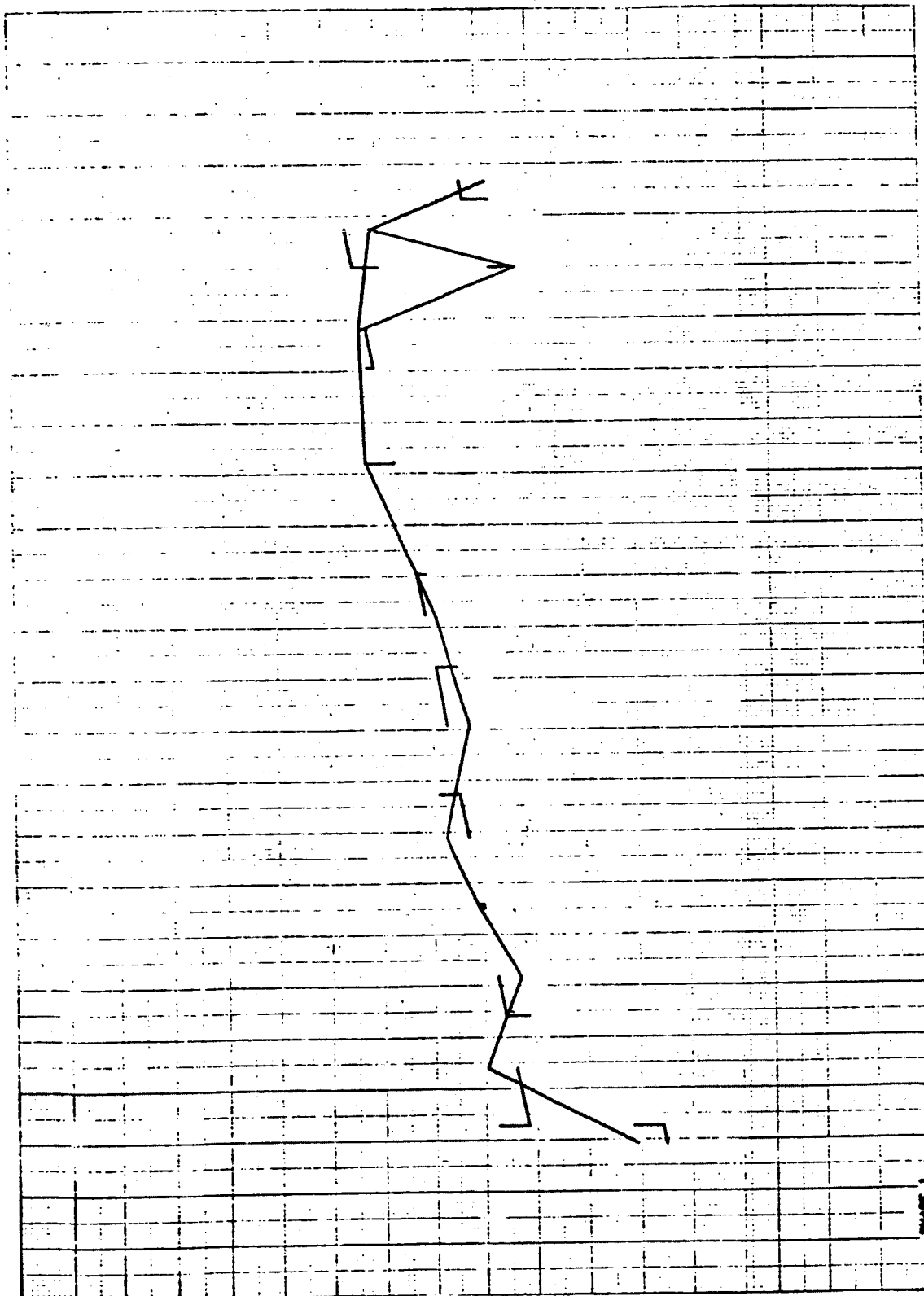
PHASE 1  
 ORBITER PAYLOAD, SYMM BASE WITH SUPPORT SPRINGS  
 FREE MODES FIXED AT INTERFACE  
 MODAL DETOR. SURFACE 8 MODC 8 FREQ. 800.0000

9/24/74 1000-007, 0 1.00000000





8 9/20/74 0000-0007. = 1.00000000

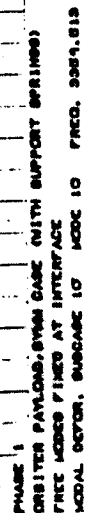


PHASE 1  
ONLITER PAYLOAD, FROM CASE WITH SUPPORT SPRINGS  
FREE MODES PLOTTED AT INTERFACE  
MODAL VECTOR, SUBCASE 6 MODC 6 PRCO, 2508.834



FIGURE 1  
CRIBTER PAYLOAD, SYMM CASE (WITH SUPPORT SPRINGS)  
FREE MODES FIXED AT INTERFACE  
MODAL DEFOR. SUBCASE 1 MODE 1 FREQ. 2492.022

11

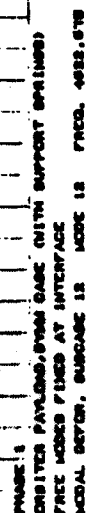


22



FREE MODES FIXED AT INTERFAC

ACCOAL DETOR, SUBCASE 11 MODE 11 PRGQ. 3004.708



**Appendix B13**  
**INPUT BULK DATA/PRE-PHASE 2 COPY RUN AND PHASE 2**  
**ANALYSIS: MODEL II ORBITER**

NASTRAN EXECUTIVE CONTROL DECK ECHO

IC TAPE COPIES  
APP OMAP  
TIME 5  
DIAG 14  
CONSOLIDATE SYMM, PHASE 1 TAPES CNTD 1 TAPE FOR PHASE 2  
(SEE NASTRAN SOURCE PROGRAM COMPILATION FOR LISTING OF OMAP SEQUENCE)  
END  
CEND

SYM TAPE COPY RUN  
CONSOLIDATE PHASE 1 TAPES ONTO 1 TAPE FOR PHASE 2

CASE CONTROL DECK ECHO

CARD  
COUNT  
1  
2  
3

TITLE =SYM TAPE COPY RUN  
SUBTITLE =CONSOLIDATE PHASE 1 TAPES ONTO 1 TAPE FOR PHASE 2  
BEGIN BULK

\*\*\* USER INFORMATION MESSAGE 207. BULK DATA NOT SORTED.XSORT WILL RE-ORDER DECK.

SYN TAPE COPY RUN  
CONSOLIDATE PHASE 1 TAPES ONTO 1 TAPE FOR PHASE 2

OCTOBER 17, 1974 NASTRAN 2/ 1/73 PAGE 3

CARD COUNT	1	2	3	4	5	6	7	8	9	10
1-	DM1	CPG100	1	1	1	1	1	1	1	DMOR11
2-	DM1	CPG100	1	1	1	1	1	1	1	DMOR12
3-	DMOR11	1	1	1	1	1	1	1	1	DMOR13
4-	DMOR12	1	1	1	1	1	1	1	1	DMOR14
5-	DMOR13	1	1	1	1	1	1	1	1	DMOR14
6-	DMOR14	1	1	1	1	1	1	1	1	DMOR14
7-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
8-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
9-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
10-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
11-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
12-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
13-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
14-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
15-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
16-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
17-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
18-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
19-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
20-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
21-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
22-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
23-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
24-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
25-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
26-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
27-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
28-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
29-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
30-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
31-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
32-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
33-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
34-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
35-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
36-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
37-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
38-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
39-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
40-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
41-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
42-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
43-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
44-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
45-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
46-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
47-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
48-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
49-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14
50-	DM1	CPG100	1	1	1	1	1	1	1	DMOR14



CARD COUNT	1	2	3	4	5	6	7	8	9	10
51-	CFUSR8	79	1.0	0.0	1.0	85	1.0	1.0	1.0	CFUSR9
52-	CFUSR9	91	1.0	1.0	1.0	97	1.0	1.0	1.0	CFUSR10
53-	CFUSR10	103	1.0	1.0	1.0	109	1.0	1.0	1.0	CFUSR11
54-	CFUSR11	115	1.0	1.0	1.0	121	1.0	1.0	1.0	CFUSR12
55-	CFUSR12	127	1.0	1.0	1.0	133	1.0	1.0	1.0	CFUSR13
56-	CFUSR13	139	1.0	1.0	1.0	145	1.0	1.0	1.0	CFUSR14
57-	CFUSR14	148	1.0	1.0	1.0	151	1.0	1.0	1.0	CFUSR15
58-	CFUSR15	157	1.0	1.0	1.0	163	1.0	1.0	1.0	CFUSR16
59-	CFUSR16	169	1.0	1.0	1.0	175	1.0	1.0	1.0	CFUSR17
60-	CFUSR17	181	1.0	1.0	1.0	187	1.0	1.0	1.0	CFUSR18
61-	CFUSR18	193	1.0	1.0	1.0	199	1.0	1.0	1.0	CFUSR19
62-	CFUSR19	205	1.0	1.0	1.0	211	1.0	1.0	1.0	CFUSR20
63-	CFUSR20	217	1.0	1.0	1.0	223	1.0	1.0	1.0	CFUSR21
64-	CFUSR21	229	1.0	1.0	1.0	235	1.0	1.0	1.0	CFUSR22
65-	DM1	CPGRPA	0	0.0	1.0	2	1.0	607	1.0	CPAYR1
66-	DM1	CPGRPA	1	0.0	0.0	0	1.0	0.0	0.0	CPAYR2
67-	DM1	CPGRPA	0	0.0	0.0	457	1.0	0.0	0.0	
68-	DM1	CPGRPA	0	0.0	0.0	2	1.0	607	1.0	
69-	DM1	CPGRPA	0	0.0	0.0	247	1.0	0.0	0.0	EWING1
70-	DM1	CPGRPA	0	0.0	0.0	259	1.0	1.0	1.0	EWING2
71-	EWING1	241	1.0	0.0	1.0	271	1.0	1.0	1.0	EWING3
72-	EWING2	253	1.0	0.0	1.0	283	1.0	1.0	1.0	EWING4
73-	EWING3	265	1.0	1.0	1.0	295	1.0	1.0	1.0	EWING5
74-	EWING4	277	1.0	1.0	1.0	307	1.0	1.0	1.0	EWING6
75-	EWING5	289	1.0	1.0	1.0					
76-	EWING6	301	1.0	1.0	1.0					
	ENDATA									

SYN DATA COPY DATA  
 (PHASE 1) TAPES 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000, 1001, 1002, 1003, 1004, 1005, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 1013, 1014, 1015, 1016, 1017, 1018, 1019, 1020, 1021, 1022, 1023, 1024, 1025, 1026, 1027, 1028, 1029, 1030, 1031, 1032, 1033, 1034, 1035, 1036, 1037, 1038, 1039, 1040, 1041, 1042, 1043, 1044, 1045, 1046, 1047, 1048, 1049, 1050, 1051, 1052, 1053, 1054, 1055, 1056, 1057, 1058, 1059, 1060, 1061, 1062, 1063, 1064, 1065, 1066, 1067, 1068, 1069, 1070, 1071, 1072, 1073, 1074, 1075, 1076, 1077, 1078, 1079, 1080, 1081, 1082, 1083, 1084, 1085, 1086, 1087, 1088, 1089, 1090, 1091, 1092, 1093, 1094, 1095, 1096, 1097, 1098, 1099, 1100, 1101, 1102, 1103, 1104, 1105, 1106, 1107, 1108, 1109, 1110, 1111, 1112, 1113, 1114, 1115, 1116, 1117, 1118, 1119, 1120, 1121, 1122, 1123, 1124, 1125, 1126, 1127, 1128, 1129, 1130, 1131, 1132, 1133, 1134, 1135, 1136, 1137, 1138, 1139, 1140, 1141, 1142, 1143, 1144, 1145, 1146, 1147, 1148, 1149, 1150, 1151, 1152, 1153, 1154, 1155, 1156, 1157, 1158, 1159, 1160, 1161, 1162, 1163, 1164, 1165, 1166, 1167, 1168, 1169, 1170, 1171, 1172, 1173, 1174, 1175, 1176, 1177, 1178, 1179, 1180, 1181, 1182, 1183, 1184, 1185, 1186, 1187, 1188, 1189, 1190, 1191, 1192, 1193, 1194, 1195, 1196, 1197, 1198, 1199, 1200, 1201, 1202, 1203, 1204, 1205, 1206, 1207, 1208, 1209, 1210, 1211, 1212, 1213, 1214, 1215, 1216, 1217, 1218, 1219, 1220, 1221, 1222, 1223, 1224, 1225, 1226, 1227, 1228, 1229, 1230, 1231, 1232, 1233, 1234, 1235, 1236, 1237, 1238, 1239, 1240, 1241, 1242, 1243, 1244, 1245, 1246, 1247, 1248, 1249, 1250, 1251, 1252, 1253, 1254, 1255, 1256, 1257, 1258, 1259, 1260, 1261, 1262, 1263, 1264, 1265, 1266, 1267, 1268, 1269, 1270, 1271, 1272, 1273, 1274, 1275, 1276, 1277, 1278, 1279, 1280, 1281, 1282, 1283, 1284, 1285, 1286, 1287, 1288, 1289, 1290, 1291, 1292, 1293, 1294, 1295, 1296, 1297, 1298, 1299, 1300, 1301, 1302, 1303, 1304, 1305, 1306, 1307, 1308, 1309, 1310, 1311, 1312, 1313, 1314, 1315, 1316, 1317, 1318, 1319, 1320, 1321, 1322, 1323, 1324, 1325, 1326, 1327, 1328, 1329, 1330, 1331, 1332, 1333, 1334, 1335, 1336, 1337, 1338, 1339, 1340, 1341, 1342, 1343, 1344, 1345, 1346, 1347, 1348, 1349, 1350, 1351, 1352, 1353, 1354, 1355, 1356, 1357, 1358, 1359, 1360, 1361, 1362, 1363, 1364, 1365, 1366, 1367, 1368, 1369, 1370, 1371, 1372, 1373, 1374, 1375, 1376, 1377, 1378, 1379, 1380, 1381, 1382, 1383, 1384, 1385, 1386, 1387, 1388, 1389, 1390, 1391, 1392, 1393, 1394, 1395, 1396, 1397, 1398, 1399, 1400, 1401, 1402, 1403, 1404, 1405, 1406, 1407, 1408, 1409, 1410, 1411, 1412, 1413, 1414, 1415, 1416, 1417, 1418, 1419, 1420, 1421, 1422, 1423, 1424, 1425, 1426, 1427, 1428, 1429, 1430, 1431, 1432, 1433, 1434, 1435, 1436, 1437, 1438, 1439, 1440, 1441, 1442, 1443, 1444, 1445, 1446, 1447, 1448, 1449, 1450, 1451, 1452, 1453, 1454, 1455, 1456, 1457, 1458, 1459, 1460, 1461, 1462, 1463, 1464, 1465, 1466, 1467, 1468, 1469, 1470, 1471, 1472, 1473, 1474, 1475, 1476, 1477, 1478, 1479, 1480, 1481, 1482, 1483, 1484, 1485, 1486, 1487, 1488, 1489, 1490, 1491, 1492, 1493, 1494, 1495, 1496, 1497, 1498, 1499, 1500, 1501, 1502, 1503, 1504, 1505, 1506, 1507, 1508, 1509, 1510, 1511, 1512, 1513, 1514, 1515, 1516, 1517, 1518, 1519, 1520, 1521, 1522, 1523, 1524, 1525, 1526, 1527, 1528, 1529, 1530, 1531, 1532, 1533, 1534, 1535, 1536, 1537, 1538, 1539, 1540, 1541, 1542, 1543, 1544, 1545, 1546, 1547, 1548, 1549, 1550, 1551, 1552, 1553, 1554, 1555, 1556, 1557, 1558, 1559, 1560, 1561, 1562, 1563, 1564, 1565, 1566, 1567, 1568, 1569, 1570, 1571, 1572, 1573, 1574, 1575, 1576, 1577, 1578, 1579, 1580, 1581, 1582, 1583, 1584, 1585, 1586, 1587, 1588, 1589, 1590, 1591, 1592, 1593, 1594, 1595, 1596, 1597, 1598, 1599, 1600, 1601, 1602, 1603, 1604, 1605, 1606, 1607, 1608, 1609, 1610, 1611, 1612, 1613, 1614, 1615, 1616, 1617, 1618, 1619, 1620, 1621, 1622, 1623, 1624, 1625, 1626, 1627, 1628, 1629, 1630, 1631, 1632, 1633, 1634, 1635, 1636, 1637, 1638, 1639, 1640, 1641, 1642, 1643, 1644, 1645, 1646, 1647, 1648, 1649, 1650, 1651, 1652, 1653, 1654, 1655, 1656, 1657, 1658, 1659, 1660, 1661, 1662, 1663, 1664, 1665, 1666, 1667, 1668, 1669, 1670, 1671, 1672, 1673, 1674, 1675, 1676, 1677, 1678, 1679, 1680, 1681, 1682, 1683, 1684, 1685, 1686, 1687, 1688, 1689, 1690, 1691, 1692, 1693, 1694, 1695, 1696, 1697, 1698, 1699, 1700, 1701, 1702, 1703, 1704, 1705, 1706, 1707, 1708, 1709, 1710, 1711, 1712, 1713, 1714, 1715, 1716, 1717, 1718, 1719, 1720, 1721, 1722, 1723, 1724, 1725, 1726, 1727, 1728, 1729, 1730, 1731, 1732, 1733, 1734, 1735, 1736, 1737, 1738, 1739, 1740, 1741, 1742, 1743, 1744, 1745, 1746, 1747, 1748, 1749, 1750, 1751, 1752, 1753, 1754, 1755, 1756, 1757, 1758, 1759, 1760, 1761, 1762, 1763, 1764, 1765, 1766, 1767, 1768, 1769, 1770, 1771, 1772, 1773, 1774, 1775, 1776, 1777, 1778, 1779, 1780, 1781, 1782, 1783, 1784, 1785, 1786, 1787, 1788, 1789, 1790, 1791, 1792, 1793, 1794, 1795, 1796, 1797, 1798, 1799, 1800, 1801, 1802, 1803, 1804, 1805, 1806, 1807, 1808, 1809, 1810, 1811, 1812, 1813, 1814, 1815, 1816, 1817, 1818, 1819, 1820, 1821, 1822, 1823, 1824, 1825, 1826, 1827, 1828, 1829, 1830, 1831, 1832, 1833, 1834, 1835, 1836, 1837, 1838, 1839, 1840, 1841, 1842, 1843, 1844, 1845, 1846, 1847, 1848, 1849, 1850, 1851, 1852, 1853, 1854, 1855, 1856, 1857, 1858, 1859, 1860, 1861, 1862, 1863, 1864, 1865, 1866, 1867, 1868, 1869, 1870, 1871, 1872, 1873, 1874, 1875, 1876, 1877, 1878, 1879, 1880, 1881, 1882, 1883, 1884, 1885, 1886, 1887, 1888, 1889, 1890, 1891, 1892, 1893, 1894, 1895, 1896, 1897, 1898, 1899, 1900, 1901, 1902, 1903, 1904, 1905, 1906, 1907, 1908, 1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1937, 1938, 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1946, 1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 22

CASE CONTROL DECK ECHO

CARD  
PRINT

TITLE # PHASE 2  
SUBTITLE # ORRITER SYMM CASE  
MPC # 21  
SPC # 11  
METHOD # 1  
VECTOR # ALL  
SURCASE 1  
LARGE # 10  
MODES # 10  
BEGIN BULK

\*\*\* USER INFORMATION MESSAGE 207, BULK DATA NOT SORTED, X SORT WILL RE-ORDER DECK.



CARD COUNT	1	2	3	4	5	6	7	8	9	10
51-	CR10	3651	0000	125.5	-12.5	51.5	0000	7	7	355
52-	CR10	3652	0000	125.5	-12.5	51.5	0000	7	7	355
53-	CR10	3653	0000	125.5	-12.5	51.5	0000	7	7	355
54-	CR10	3654	0000	125.5	-12.5	51.5	0000	7	7	355
55-	CR10	3655	0000	125.5	-12.5	51.5	0000	7	7	355
56-	CR10	3656	0000	125.5	-12.5	51.5	0000	7	7	355
57-	CR10	3657	0000	125.5	-12.5	51.5	0000	7	7	355
58-	CR10	3658	0000	125.5	-12.5	51.5	0000	7	7	355
59-	CR10	3659	0000	125.5	-12.5	51.5	0000	7	7	355
60-	CR10	3660	0000	125.5	-12.5	51.5	0000	7	7	355
61-	CR10	3661	0000	125.5	-12.5	51.5	0000	7	7	355
62-	CR10	3662	0000	125.5	-12.5	51.5	0000	7	7	355
63-	CR10	3663	0000	125.5	-12.5	51.5	0000	7	7	355
64-	CR10	3664	0000	125.5	-12.5	51.5	0000	7	7	355
65-	CR10	3665	0000	125.5	-12.5	51.5	0000	7	7	355
66-	CR10	3666	0000	125.5	-12.5	51.5	0000	7	7	355
67-	CR10	3667	0000	125.5	-12.5	51.5	0000	7	7	355
68-	CR10	3668	0000	125.5	-12.5	51.5	0000	7	7	355
69-	CR10	3669	0000	125.5	-12.5	51.5	0000	7	7	355
70-	CR10	3670	0000	125.5	-12.5	51.5	0000	7	7	355
71-	CR10	3671	0000	125.5	-12.5	51.5	0000	7	7	355
72-	CR10	3672	0000	125.5	-12.5	51.5	0000	7	7	355
73-	CR10	3673	0000	125.5	-12.5	51.5	0000	7	7	355
74-	CR10	3674	0000	125.5	-12.5	51.5	0000	7	7	355
75-	CR10	3675	0000	125.5	-12.5	51.5	0000	7	7	355
76-	CR10	3676	0000	125.5	-12.5	51.5	0000	7	7	355
77-	CR10	3677	0000	125.5	-12.5	51.5	0000	7	7	355
78-	CR10	3678	0000	125.5	-12.5	51.5	0000	7	7	355
79-	CR10	3679	0000	125.5	-12.5	51.5	0000	7	7	355
80-	CR10	3680	0000	125.5	-12.5	51.5	0000	7	7	355
81-	CR10	3681	0000	125.5	-12.5	51.5	0000	7	7	355
82-	CR10	3682	0000	125.5	-12.5	51.5	0000	7	7	355
83-	CR10	3683	0000	125.5	-12.5	51.5	0000	7	7	355
84-	CR10	3684	0000	125.5	-12.5	51.5	0000	7	7	355
85-	CR10	3685	0000	125.5	-12.5	51.5	0000	7	7	355
86-	CR10	3686	0000	125.5	-12.5	51.5	0000	7	7	355
87-	CR10	3687	0000	125.5	-12.5	51.5	0000	7	7	355
88-	CR10	3688	0000	125.5	-12.5	51.5	0000	7	7	355
89-	CR10	3689	0000	125.5	-12.5	51.5	0000	7	7	355
90-	CR10	3690	0000	125.5	-12.5	51.5	0000	7	7	355
91-	CR10	3691	0000	125.5	-12.5	51.5	0000	7	7	355
92-	CR10	3692	0000	125.5	-12.5	51.5	0000	7	7	355
93-	CR10	3693	0000	125.5	-12.5	51.5	0000	7	7	355
94-	CR10	3694	0000	125.5	-12.5	51.5	0000	7	7	355
95-	CR10	3695	0000	125.5	-12.5	51.5	0000	7	7	355
96-	CR10	3696	0000	125.5	-12.5	51.5	0000	7	7	355
97-	CR10	3697	0000	125.5	-12.5	51.5	0000	7	7	355
98-	CR10	3698	0000	125.5	-12.5	51.5	0000	7	7	355
99-	CR10	3699	0000	125.5	-12.5	51.5	0000	7	7	355
100-	CR10	3700	0000	125.5	-12.5	51.5	0000	7	7	355

CARD	1	2	3	4	5	6	7	8	9	10
101-	MPD	3010	3659	3	0.0	410	3	0.0		
102-	MPD	3010	3660	1	0.0	405	1	0.0		
103-	MPD	3010	3660	2	0.0	405	2	0.0		
104-	MPD	3010	3660	3	0.0	405	3	0.0		
105-	MPD	3010	3663	1	0.0	410	1	0.0		
106-	MPD	3010	3663	2	0.0	410	2	0.0		
107-	MPD	3010	3663	3	0.0	410	3	0.0		
108-	MPD	3010	3664	1	0.0	405	1	0.0		
109-	MPD	3010	3664	2	0.0	405	2	0.0		
110-	MPD	3010	3664	3	0.0	405	3	0.0		
111-	MPD	3010	3667	1	0.0	410	1	0.0		
112-	MPD	3010	3667	2	0.0	410	2	0.0		
113-	MPD	3010	3667	3	0.0	410	3	0.0		
114-	MPD	3010	3669	1	0.0	405	1	0.0		
115-	MPD	3010	3669	2	0.0	405	2	0.0		
116-	MPD	3010	3669	3	0.0	405	3	0.0		
117-	MPD	3010	3671	1	0.0	410	1	0.0		
118-	MPD	3010	3671	2	0.0	410	2	0.0		
119-	MPD	3010	3671	3	0.0	410	3	0.0		
120-	MPD	3010	3672	1	0.0	405	1	0.0		
121-	MPD	3010	3672	2	0.0	405	2	0.0		
122-	MPD	3010	3672	3	0.0	405	3	0.0		
123-	MPD	3010	4004	1	0.0	233	1	0.0		
124-	MPD	3010	4004	2	0.0	233	2	0.0		
125-	MPD	3010	4006	1	0.0	235	1	0.0		
126-	MPD	3010	4006	2	0.0	235	2	0.0		
127-	MPD	3010	4008	1	0.0	232	1	0.0		
128-	MPD	3010	4008	2	0.0	232	2	0.0		
129-	MPD	3010	4010	1	0.0	229	1	0.0		
130-	MPD	3010	4010	2	0.0	229	2	0.0		
131-	MPD	3010	4034	1	0.0	519	1	0.0		CM4034X
132-	MPD	3010	519	1	0.5	519	1	0.5		
133-	MPD	3010	4034	2	0.0	760	2	0.0		CM4064X
134-	MPD	3010	4064	1	0.0	760	1	0.0		
135-	MPD	3010	760	1	0.5	760	1	0.5		
136-	MPD	3010	4064	2	0.0	760	2	0.0		
137-	MPD	3010	4114	1	0.0	1161	1	0.0		CM4114X
138-	MPD	3010	4114	2	0.0	1161	2	0.0		
139-	MPD	3010	4114	3	0.0	1161	3	0.0		
140-	MPD	3010	4154	1	0.0	1618	1	0.0		CM4154X
141-	MPD	3010	4154	2	0.0	1618	2	0.0		
142-	MPD	3010	4154	3	0.0	1618	3	0.0		
143-	MPD	3010	4174	1	0.0	1818	1	0.0		
144-	MPD	3010	4174	2	0.0	1818	2	0.0		
145-	MPD	3010	4174	3	0.0	1818	3	0.0		
146-	MPD	3010	4175	1	0.0	1931	1	0.0		
147-	MPD	3010	4175	2	0.0	1931	2	0.0		
148-	MPD	3010	4178	1	0.0	1927	1	0.0		
149-	MPD	3010	4178	2	0.0	1927	2	0.0		
150-	MPD	3010	4180	1	0.0	1923	1	0.0		
151-	MPD	3010	4180	2	0.0	1923	2	0.0		

CARD COUNT	1	2	3	4	5	6	7	8	9	10
151-	MPG	4001	4002	4003	4004	4005	4006	4007	4008	4009
152-	MPG	4011	4012	4013	4014	4015	4016	4017	4018	4019
153-	MPG	4021	4022	4023	4024	4025	4026	4027	4028	4029
154-	MPG	4031	4032	4033	4034	4035	4036	4037	4038	4039
155-	MPG	4041	4042	4043	4044	4045	4046	4047	4048	4049
156-	MPG	4051	4052	4053	4054	4055	4056	4057	4058	4059
157-	MPG	4061	4062	4063	4064	4065	4066	4067	4068	4069
158-	MPG	4071	4072	4073	4074	4075	4076	4077	4078	4079
159-	MPG	4081	4082	4083	4084	4085	4086	4087	4088	4089
160-	MPG	4091	4092	4093	4094	4095	4096	4097	4098	4099
161-	MPG	4101	4102	4103	4104	4105	4106	4107	4108	4109
162-	MPG	4111	4112	4113	4114	4115	4116	4117	4118	4119
163-	MPG	4121	4122	4123	4124	4125	4126	4127	4128	4129
164-	MPG	4131	4132	4133	4134	4135	4136	4137	4138	4139
165-	MPG	4141	4142	4143	4144	4145	4146	4147	4148	4149
166-	MPG	4151	4152	4153	4154	4155	4156	4157	4158	4159
167-	MPG	4161	4162	4163	4164	4165	4166	4167	4168	4169
168-	MPG	4171	4172	4173	4174	4175	4176	4177	4178	4179
169-	MPG	4181	4182	4183	4184	4185	4186	4187	4188	4189
170-	MPG	4191	4192	4193	4194	4195	4196	4197	4198	4199
171-	MPG	4201	4202	4203	4204	4205	4206	4207	4208	4209
172-	MPG	4211	4212	4213	4214	4215	4216	4217	4218	4219
173-	MPG	4221	4222	4223	4224	4225	4226	4227	4228	4229
174-	MPG	4231	4232	4233	4234	4235	4236	4237	4238	4239
175-	MPG	4241	4242	4243	4244	4245	4246	4247	4248	4249
176-	MPG	4251	4252	4253	4254	4255	4256	4257	4258	4259
177-	MPG	4261	4262	4263	4264	4265	4266	4267	4268	4269
178-	MPG	4271	4272	4273	4274	4275	4276	4277	4278	4279
179-	MPG	4281	4282	4283	4284	4285	4286	4287	4288	4289
180-	MPG	4291	4292	4293	4294	4295	4296	4297	4298	4299
181-	MPG	4301	4302	4303	4304	4305	4306	4307	4308	4309
182-	MPG	4311	4312	4313	4314	4315	4316	4317	4318	4319
183-	MPG	4321	4322	4323	4324	4325	4326	4327	4328	4329
184-	MPG	4331	4332	4333	4334	4335	4336	4337	4338	4339
185-	MPG	4341	4342	4343	4344	4345	4346	4347	4348	4349
186-	MPG	4351	4352	4353	4354	4355	4356	4357	4358	4359
187-	MPG	4361	4362	4363	4364	4365	4366	4367	4368	4369
188-	MPG	4371	4372	4373	4374	4375	4376	4377	4378	4379
189-	MPG	4381	4382	4383	4384	4385	4386	4387	4388	4389
190-	MPG	4391	4392	4393	4394	4395	4396	4397	4398	4399
191-	MPG	4401	4402	4403	4404	4405	4406	4407	4408	4409

**Appendix B14**  
**INPUT & PLOTS/PHASE 3 ANALYSIS: MODEL II FUSELAGE**  
**SYMMETRIC FREE-FREE ORBITER MODES**



C A S E    C O N T R O L    D E C K    E C H O

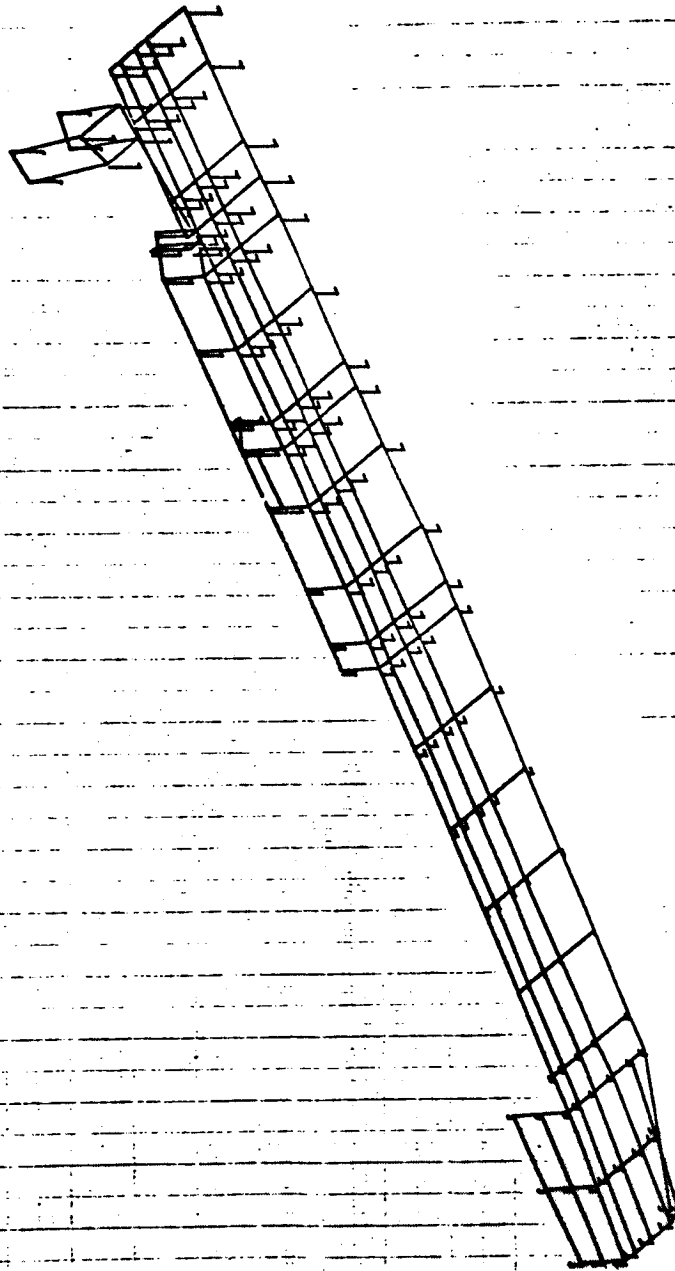
CARD  
COUNT

1 TITLE # PHASE 3 XORBITER FUSELAGE-SYMM CASEH MODEL 2  
 2 SUBTITLE # SKINS HALF EFF.LONG..RSX EFF.TRANS.AT WINGXG#2/3EFF.#  
 3 MAXLINES # 50000  
 4 VECTOR # ALL  
 5 SUBCASE 1 # ORBITER FREE MODES  
 6 LABEL # 23  
 7 OUTPUT#PLOT#  
 8 SET 40 # INCLUDE 2200 THRU 2293.2630 THRU 2647.2656 THRU 2659.  
 9 2706 THRU 2708.2717.2699  
 10 SET 41 # INCLUDE 2600 THRU 2629.2646 THRU 2655.2700 THRU 2705  
 11 2706 THRU 2708.2717.2699  
 12 SET 42 # INCLUDE 2300 THRU 2432  
 13 PLOT# CALCUMP 765.105  
 14 AXIS #MY,X,Z  
 15 VIEW # 30.0,45.0,0.0  
 16 MAXIMUM DEFORMATION 5.0  
 17 FIND SCALE ORIGIN 40,SET 40  
 18 PLOT MODAL DEFORMATION 1 THRU 23,SET 40,SHAPE,VECTOR XYZ  
 19 PLOT MODAL DEFORMATION 1 THRU 42,SET 42,SHAPE,VECTOR XYZ  
 20 BEGIN BULK

PARAM TPNAME2 ORBTSP2

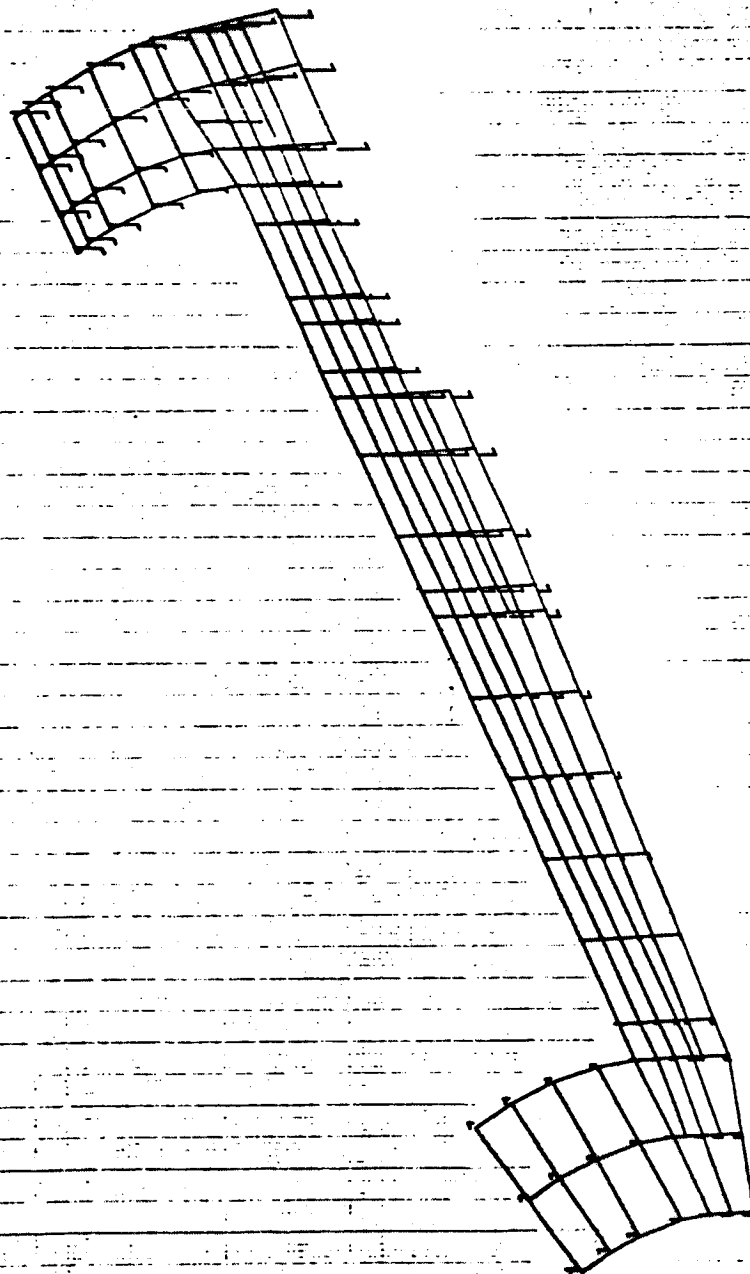
ENDDATA

1 10/10/74 1001-027. 0 1.00000000



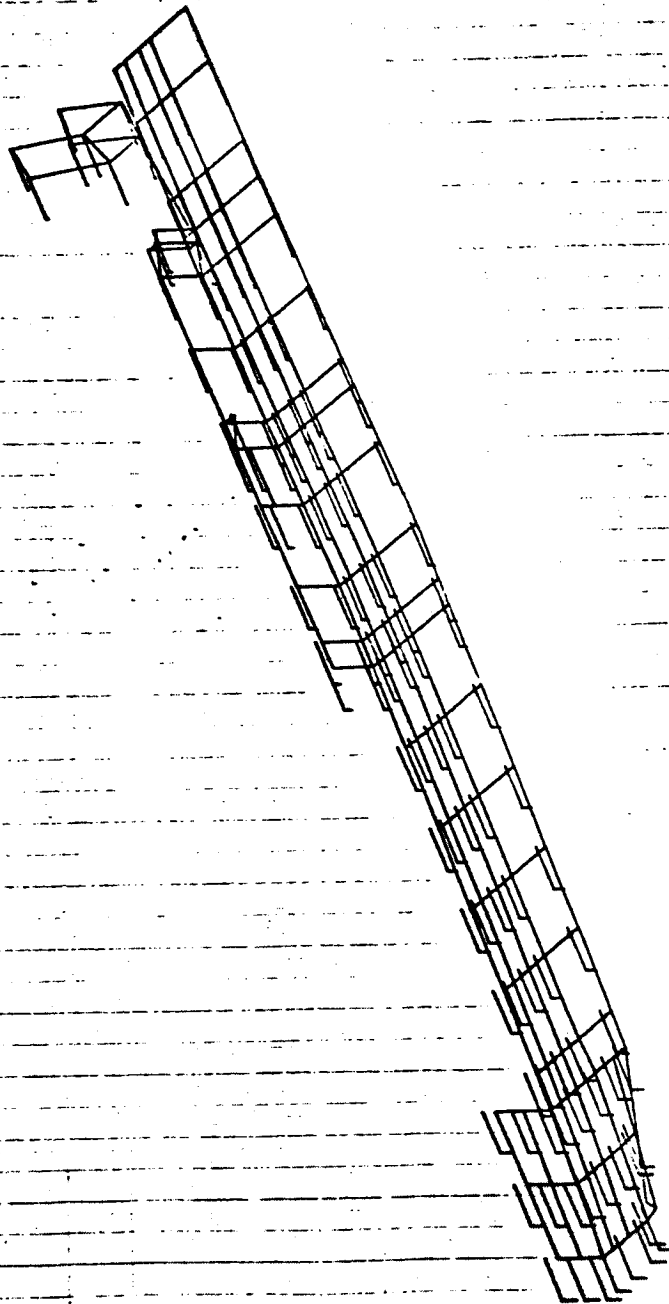
PHASE 3 ORBITER FUELAGE-STIM CASE) MODEL 2  
SKINS HALF EFF.LONG.,88 ( EFF. TRANS.AT WING CO-2/9077.)  
ORBITER FUEL FUEL CASES  
MEDAL BEFOR. SUBCASE 1 MODEL 1 FREQ. 0.

10/19/74 1001-007, 9 J. PROSOTING



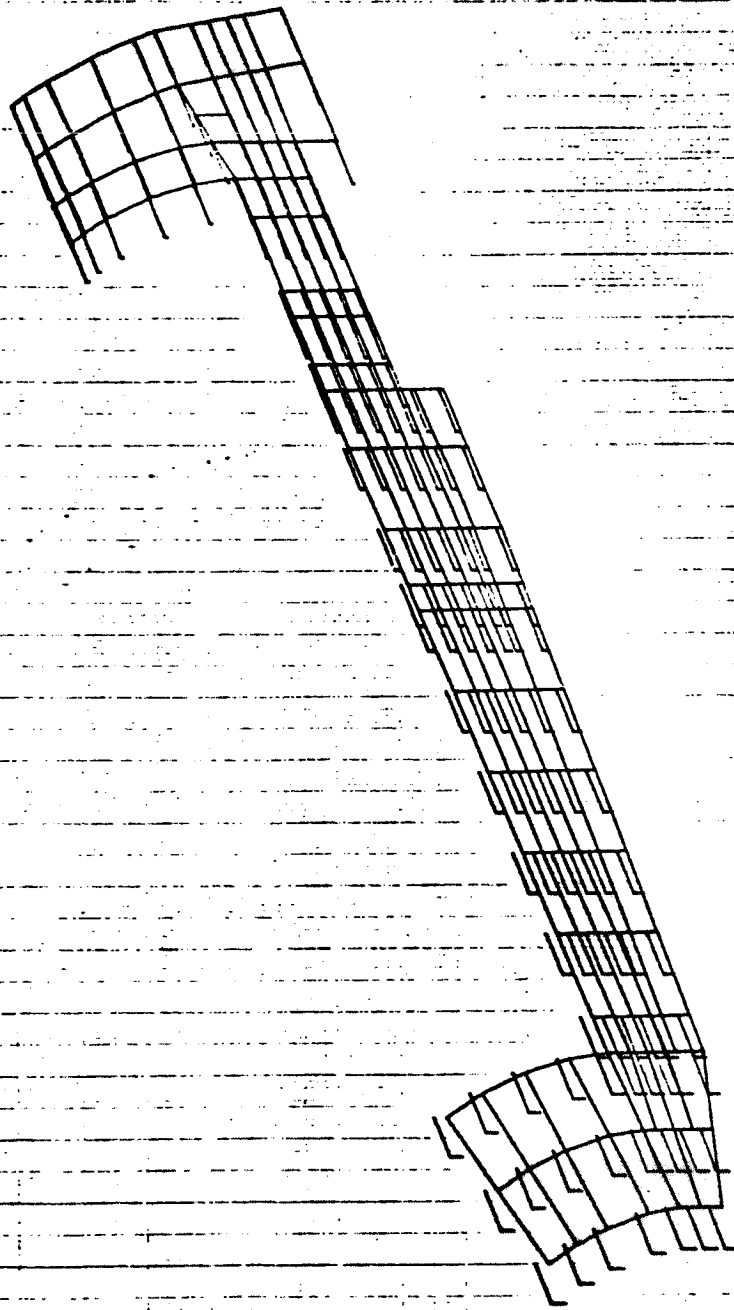
PHASE 3 ORBITER FUELAGE-PYRAM CASE) MODEL 2  
 SKINS HALF EFF.LONG. 1.881 EFF. TRANS. AT WING (8-2/8877.1)  
 ORBITER FREE FREE MODES  
 MODAL DEFOR. SURFACE 1 MODE 1 FREQ. 0.

10/10/74 1000-007.0 0.94210000



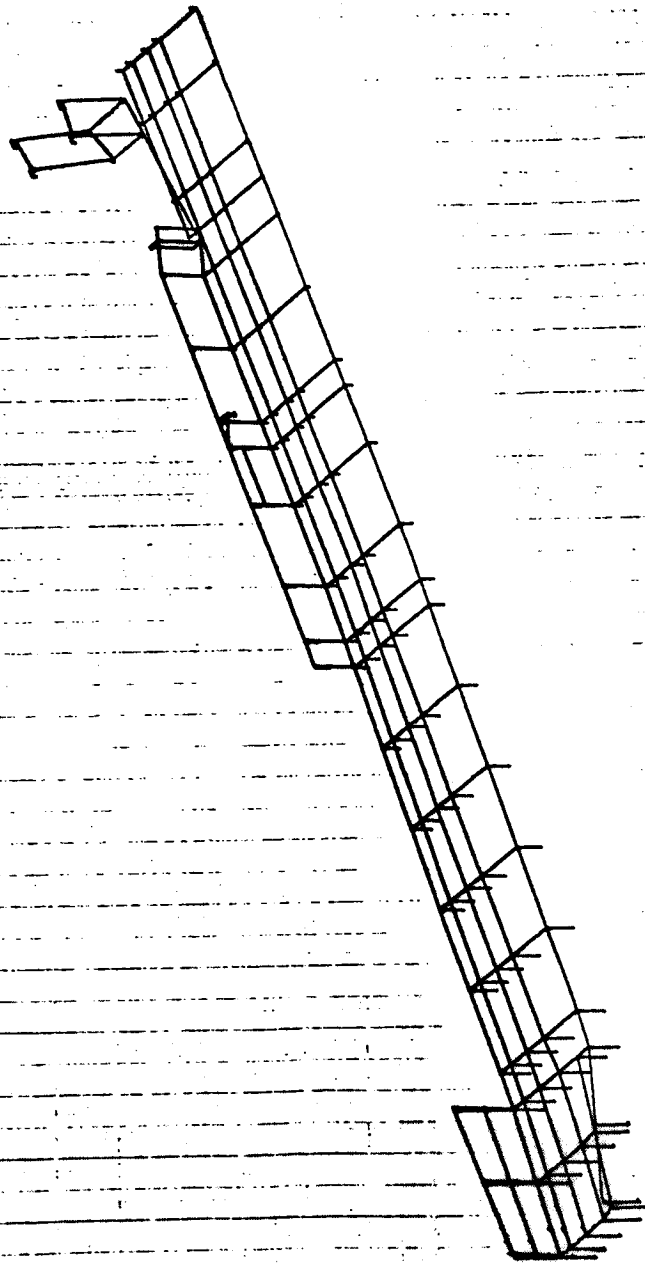
PHASE 3 ORBITER FUELAGE-SYSTEM CASE) MODEL 2  
 SKIN HALF EFF.LONG..88 ( EFF.TRANS.AT WING (8-2/9077.)  
 ORBITER FREE FREE MODES  
 MODAL DETOR. SURFACE 2 MODE 2 FREQ. 0.

10/10/74 1000-007, 0. 91010000



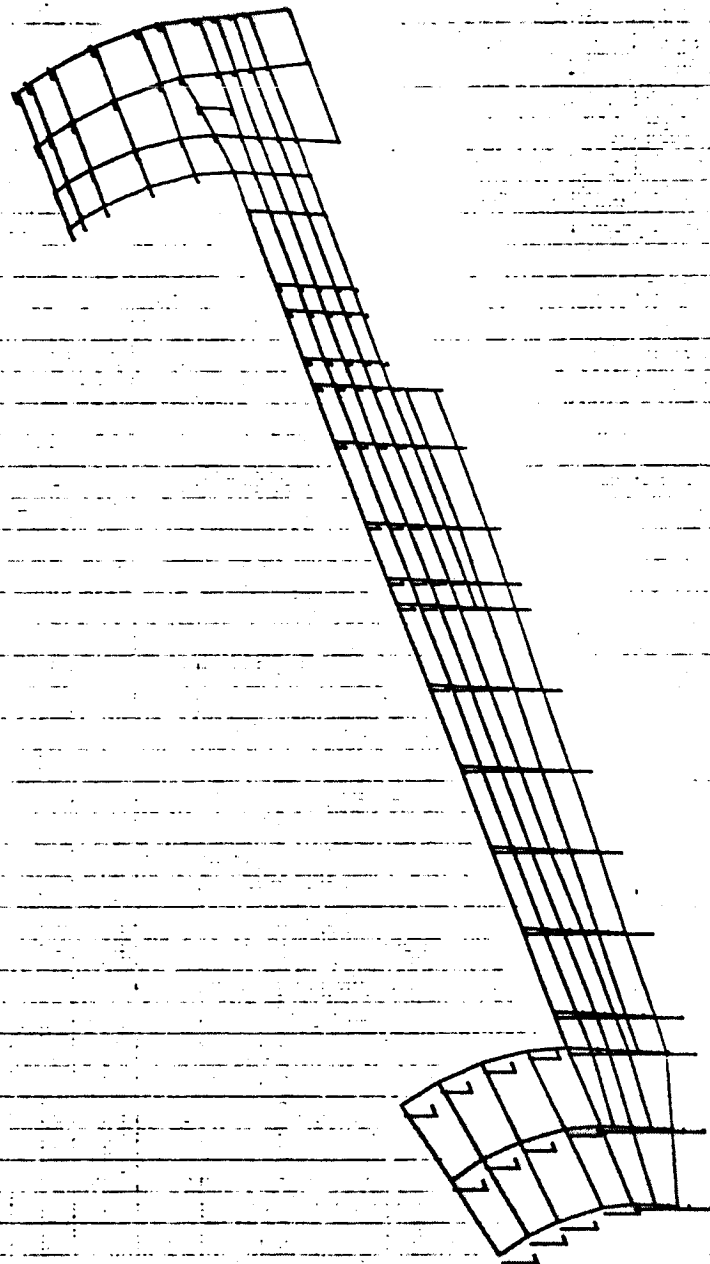
PHASE 2 CONSIDER FUSELAGE-BYON GARD MODEL 2  
 SKINE HALF EFF. LONG. 180 EFF. TRANS. AT WING (0-2/SEFF.)  
 CONSIDER FREE FREE WINGS  
 AT A. 00770. SUP. AS. 2 WING 2 FREE. 0.

9 10/10/74 . 100-027 . 1.1707010



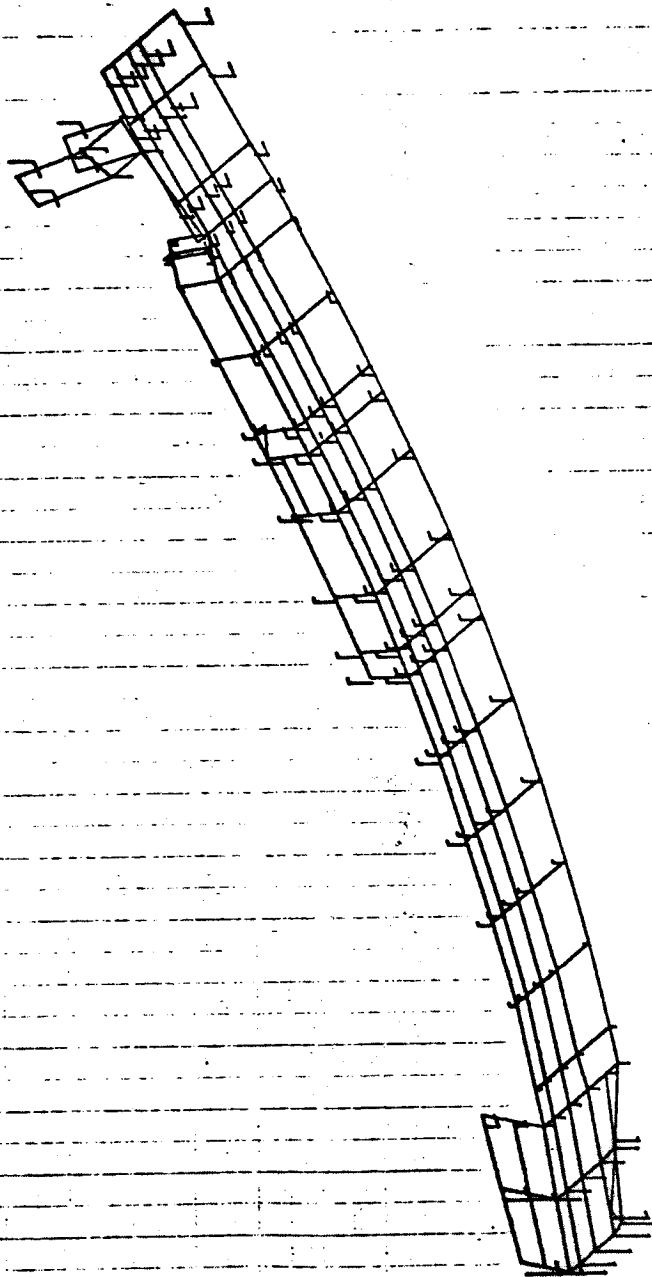
PHASE 3 ORBITER FUSELAGE-SPIN CASED MODEL 2  
 SKIN HALF EFT.LONG..88 ( EFT.TRANS.AT WING(0-2/9077.)  
 ORBITER FREE FREE MODES  
 MODAL 05/01. SUBCASE 3 MODE 3 FREQ. 0.

0 10/10/74 1000-007, 0 1.17007010



PHASE 3 ORBITER FORELAME--BYRON CASE) MODEL 2  
 BLIND HALF STP LONG. 0.81 EFF. TRANS AT WING (0.8/0.877.)  
 ORBITER FREE FREE MODES  
 MODAL DEFOR. SUBCASE 3 MODE 3 FREQ. 0.

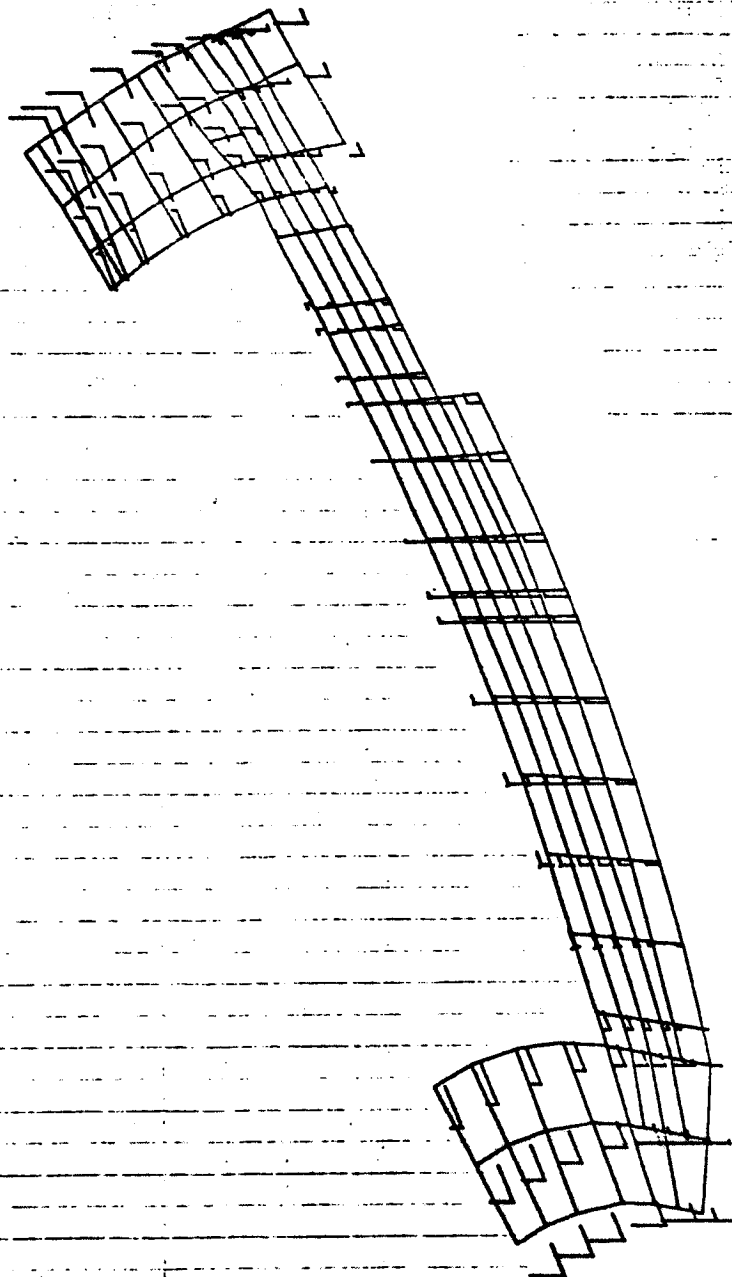
10/18/74. MAN-DEF. = 1.01501470



PHASE 3 (ORBITER FUELAGE-SYM CASE) MODE 2  
SKIN HALF EFF.LONG.05 (EFF. TRANS. AT WING 0-2/90TT.)  
ORBITER FREE FREE MODES  
MODAL DEFOR. SURFACE 4 MODE 4 FREQ. 44.11371

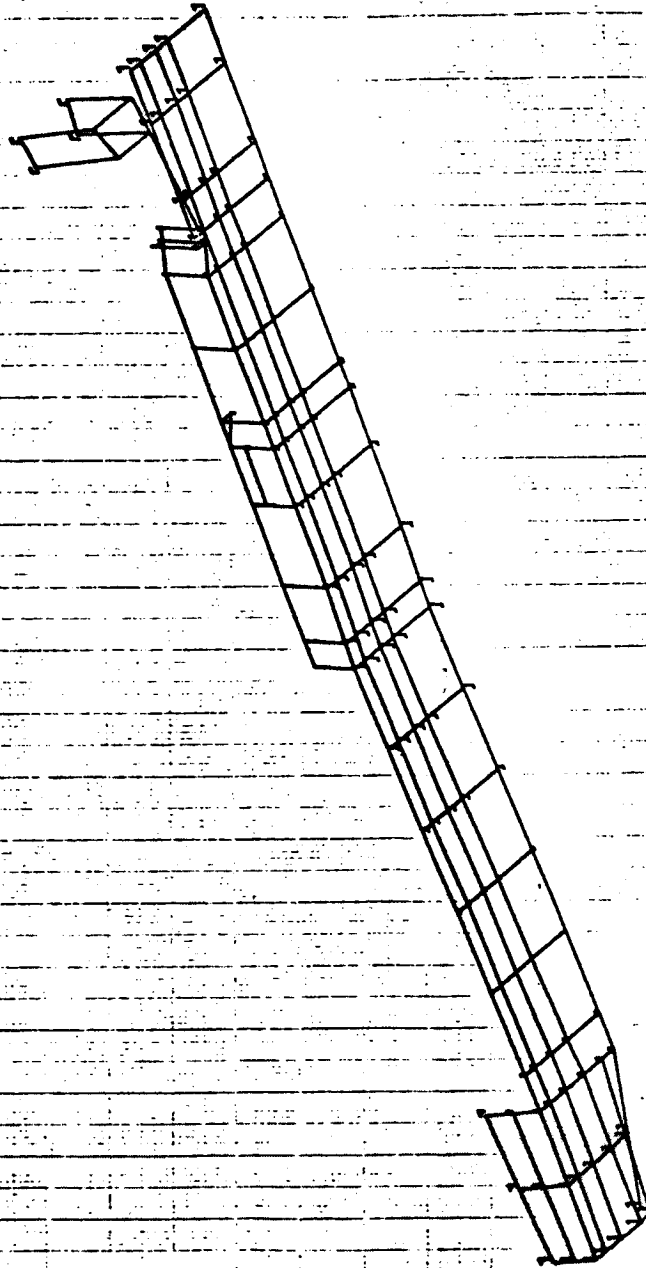


4 10/19/74 MM-827, = 1.01891470



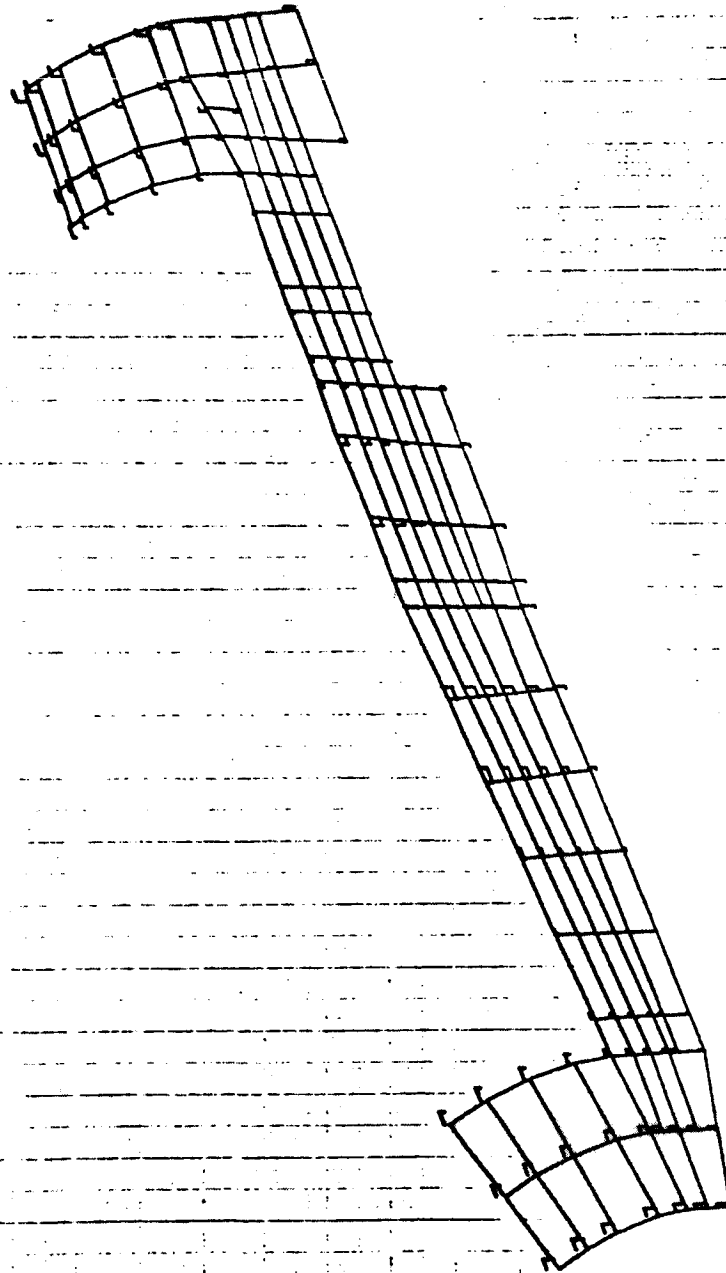
PHASE 3 CONSIDER FURTHER-87MM CASE) MODEL 8  
SKIN -ALP EFF. LOW. .88: EFF. TRANS. AT WING (0.2/2077.1)  
ORBITAL FREE FREE 100-8  
MEDIA DEPTH. SURFACE MONO 4 PRIC 14 11731

10/10/74 1000-007. = 8.01710421



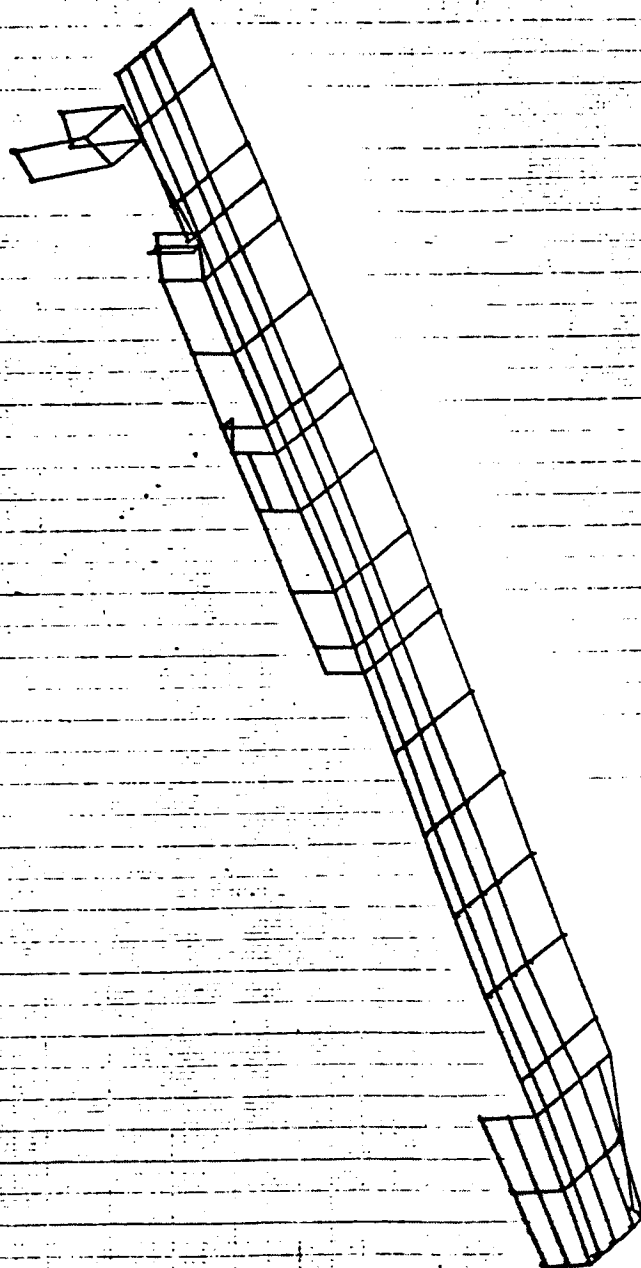
PHASE 3 CRITTER PURCHASE-SPYGLASS CASE) MODEL 2  
BEING HALF EPP.LONG.98 ( EPP.TRANS.AT WING 10-8/9077.)  
CRITTER FREE FREE MODEL 8  
MODEL 10/CR. SUBCASE 8 MODEL 8 FREED. 48.33840

18/10/74 MM-227, 0.0110421



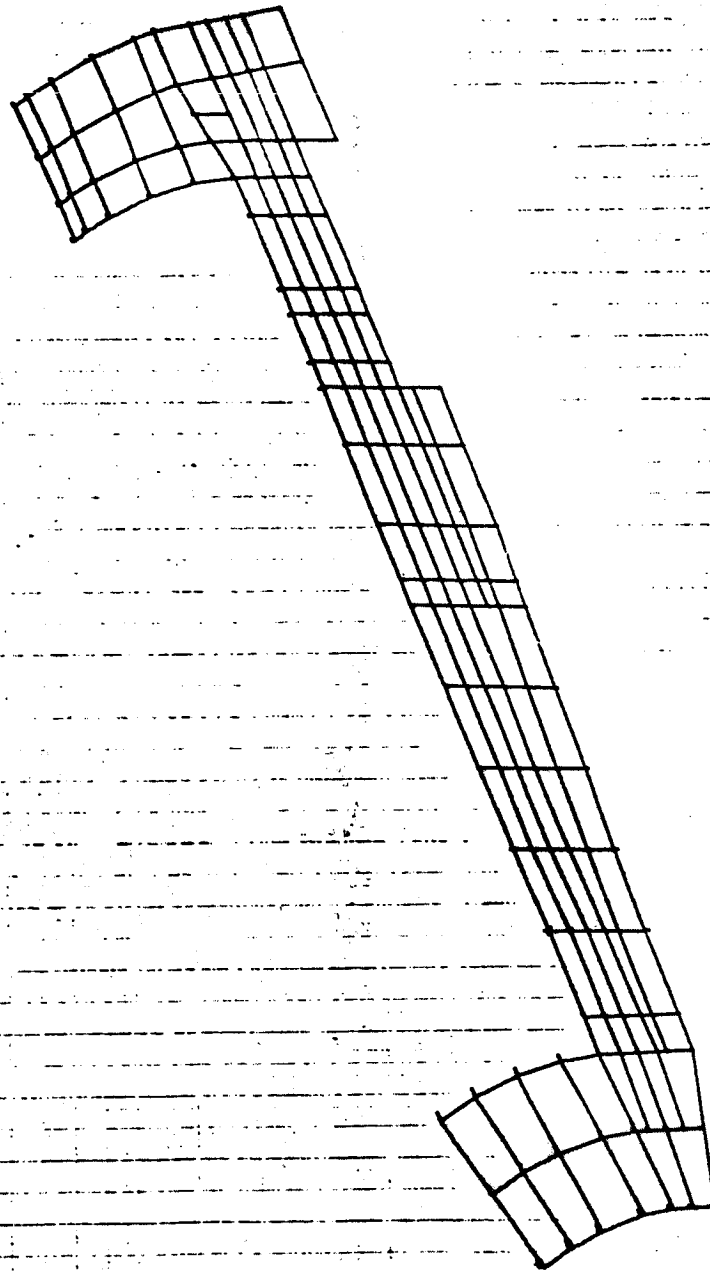
PHASE 3 ORBITER FUSELAGE-SYM CASE) MODEL 2  
 BLIND HALF EFF. LONG. .88 ( EFF. TRANS. AT WING (0.8/3EFF. )  
 ORBITER FREE FREE MODES  
 MODAL ORDER, SURFACE 5 MODE 8 FREQ. 46.33840

10/10/74 1000-007, 0.00000000



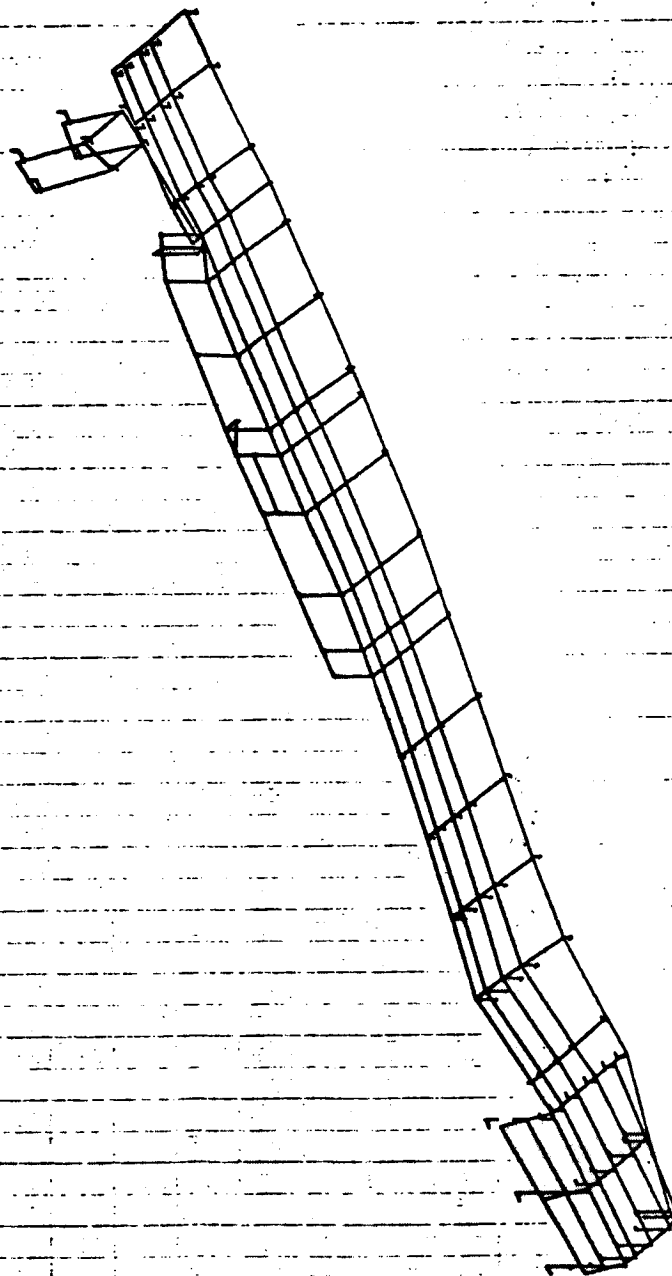
PHASE 3 ORBITER FUELAGE-SYMM CASE) MODEL 2  
SKIN HALF EFF. LONG. 85 ( EFF. TRANS. AT WING (8-2/3 EFF. )  
ORBITER FREE FREE MODES  
MODAL DEFOR. SUBCASE 6 MODE 6 FREQ. 51.28222

12/13/74 1001-007, 0 00000000



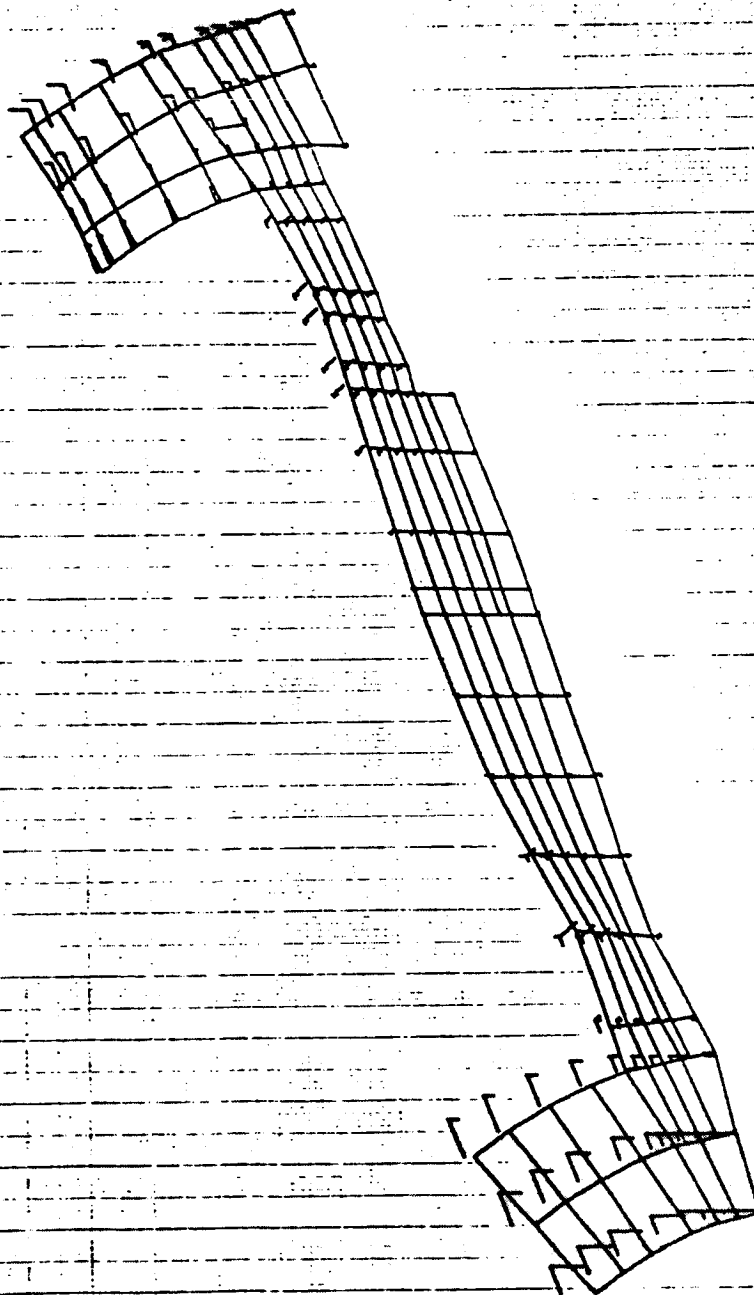
PHASE 0 ORBITER FUELAGE-0700 CASE 0 MODEL 0  
 SKINS HALF EFF.LONG..88 ( EFF.TRIANG..AT WING 0-2/0077.)  
 ORBITER FREE FREE MODES  
 MODAL 0070R. FUELAGE 0 MODE 0 FREQ. 01.20222

1 10/18/76 1000-007. = 0.00700000



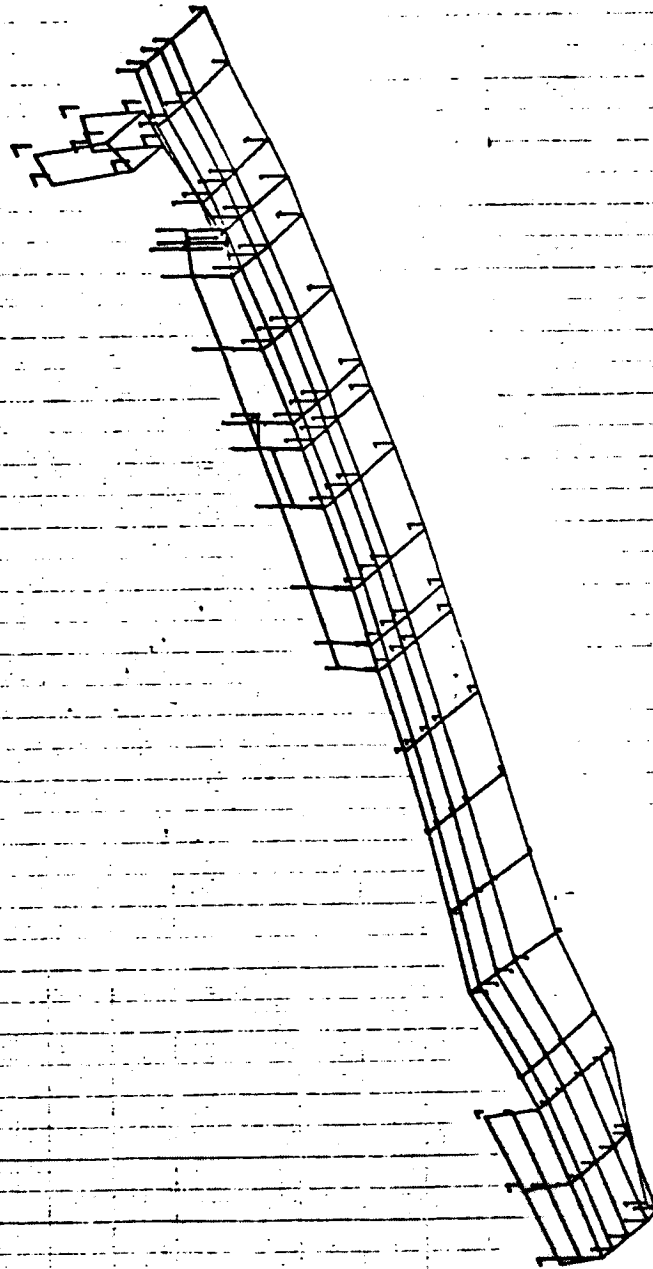
PHASE 9 ORBITER PURCHASE-SYSTEM BASED MODEL 2  
SKIN HALF 077.1000.000 077.1000.000  
ORBITER FREE PRICE MODEL 2  
MODEL 0000. PURCHASE 7 MODEL 7 FREE. 04.42372

1 10/10/74 1000-007, 0.00710-000



PHASE 3 CONSIDER PUNELARE-PTM CASE) MODEL 2  
 BEING HALF EFF. LONG. 88 ( EFF. TRANS. AT WING 08-2/0077.)  
 CONSIDER FREE FREE MODES  
 MODAL DEFORM. SUBCASE 1 MODE 1 FREQ. 84.42372

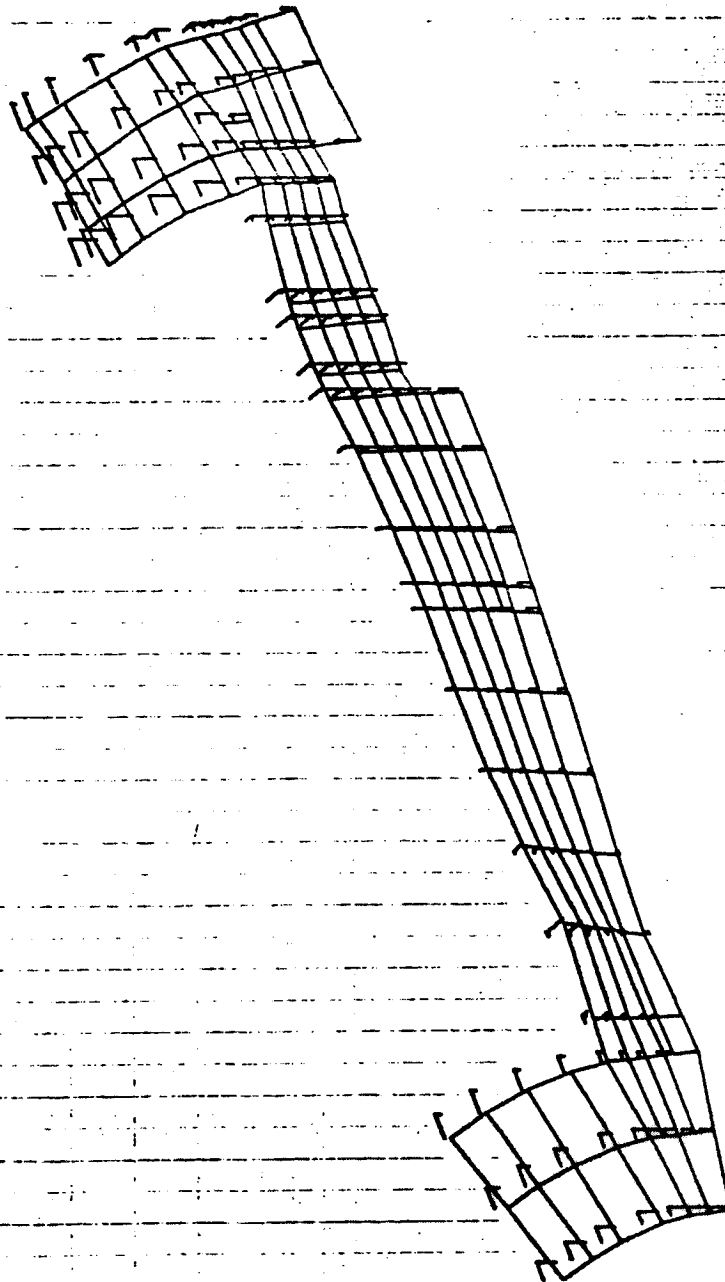
78 18/18/74 100-827, = 0.3000189



PHASE 3 ORBITER FUSelage-8744 CASE) MODEL 8  
 SKINS HALF EFF. LONG. 88 ( EFF. TRANS. AT WING (8-2/2EFF.)  
 ORBITER FREE FREE MODES  
 MODAL ORDER. SUBCASE 8 MODE 6 FREQ. 82.71864

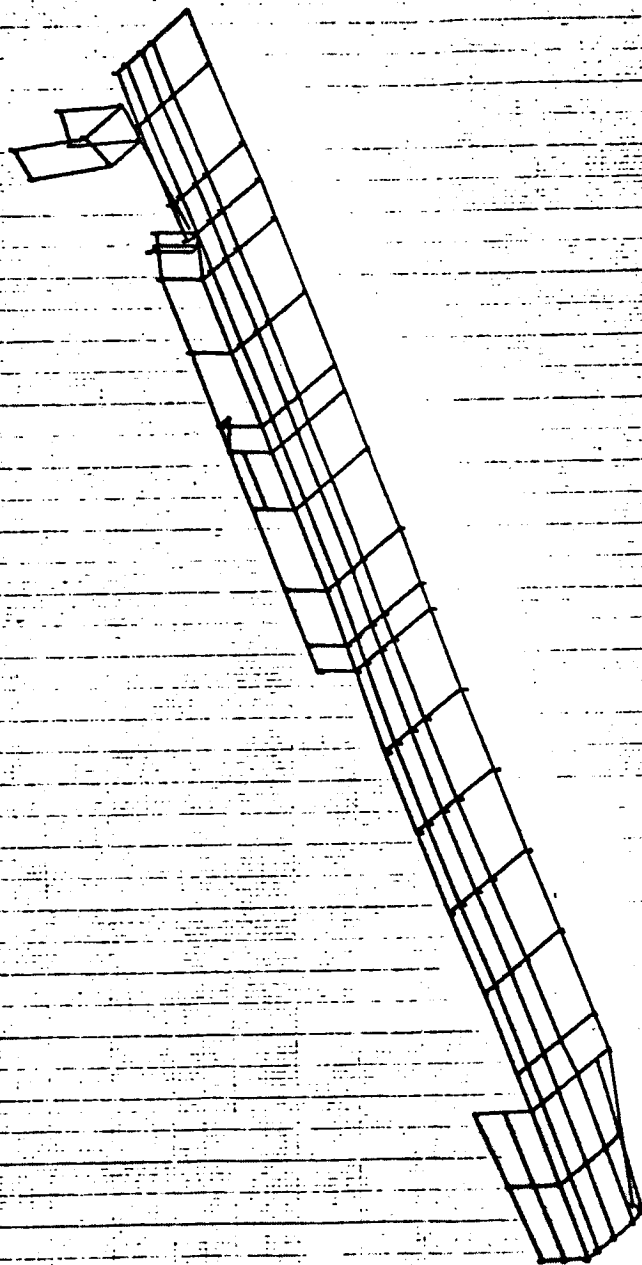


10/1/74 100-807, 0 0, 0000180

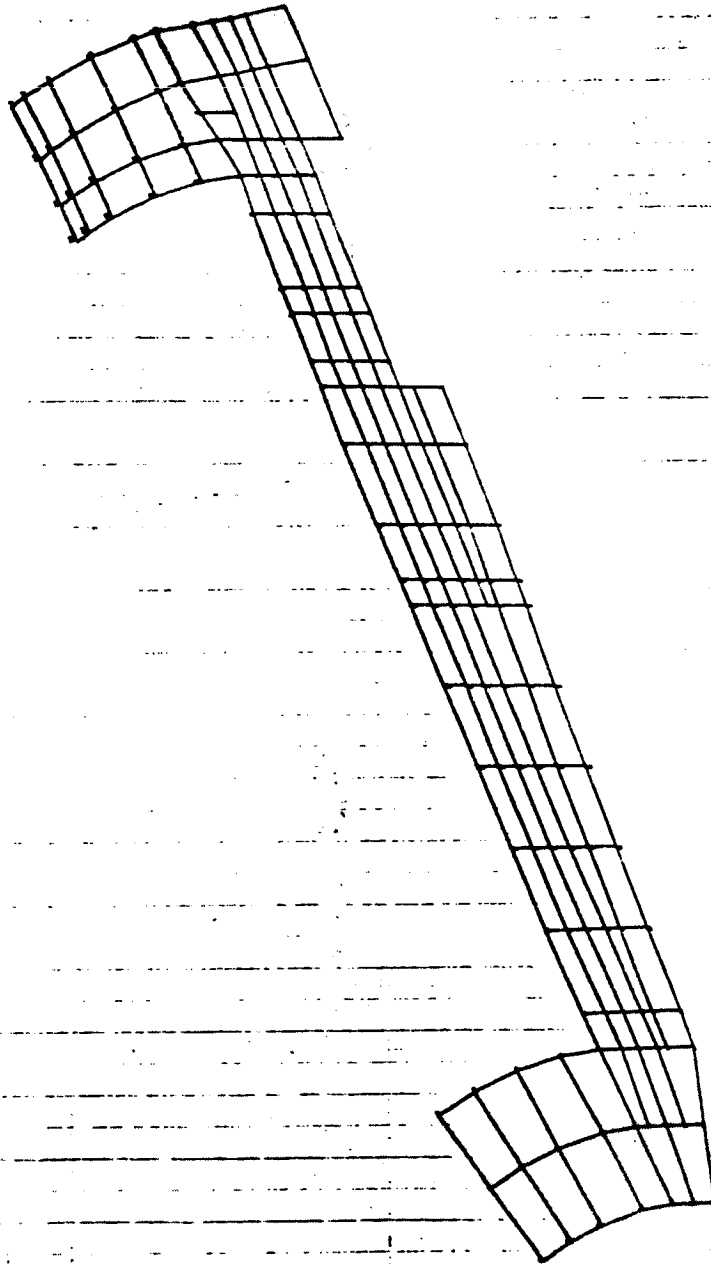


PHASE 3 ORBITER FUSELAGE-87501 CASE3 MODEL 8  
 SKINS HALF CTF, LONG, .88 ( CTF, TRANS. AT WING (8=3/8CTF.)  
 ORBITER FREE FREE MORSE  
 MODAL DEFOR, FUSELAGE 8 MODEL 8 FREQ. 82.71004

10-10-74 1000-007, P. 0-44100002

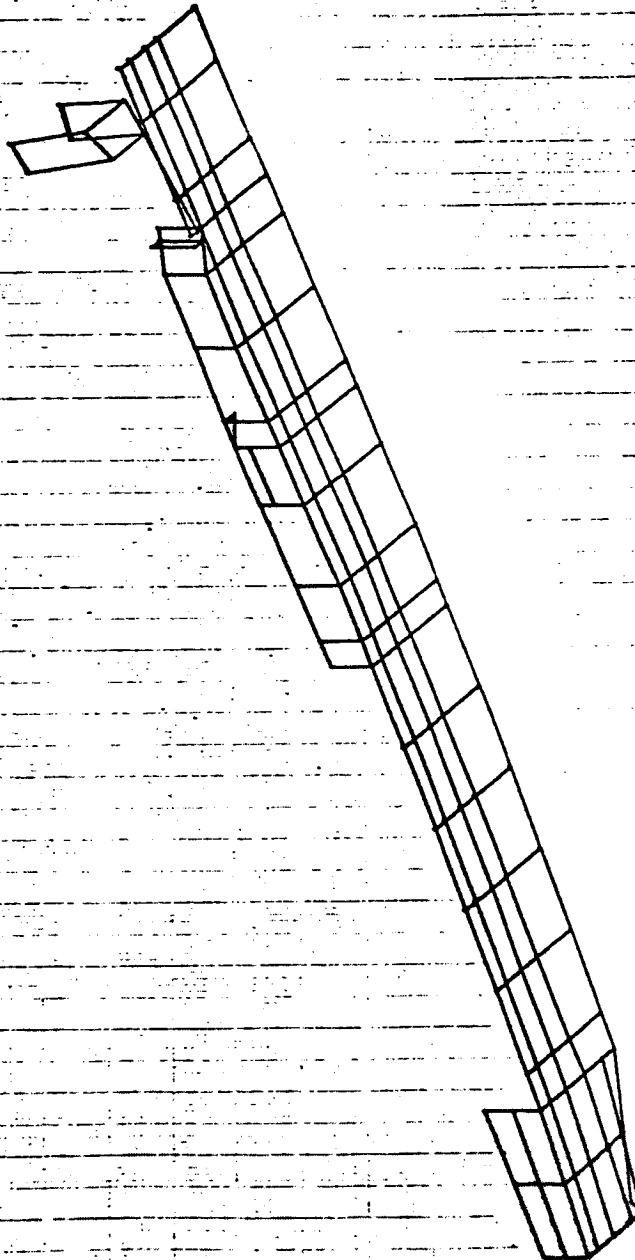


PHASE 9 ORBITER FUELAGE-574M CASE) MODE 9  
SEING HALF 577, LONG, 781 EFF, THANG, AT WING (8-2/2EFF.)  
ORBITER FREE FREE MODES  
MODAL DEFOR. SUBCASE 9 MODE 9 FREQ. 99.99991



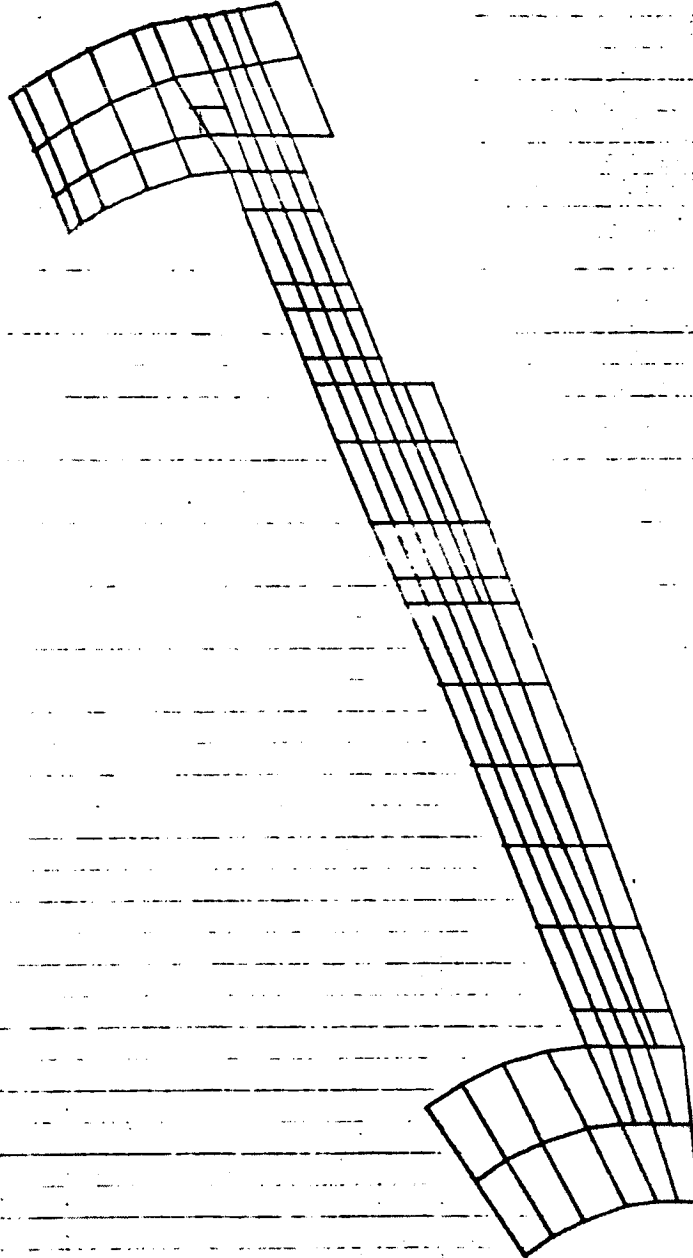
PHASE 9 CUBITER FUSLAGE-870M CASE) MODEL 2  
 SKINS HALF ETP.LONG..881 ETP. TRANS.AT WING(8-8/8ETV.)  
 CUBITER PRICE FREE MODES  
 MODAL DETON. SUSGAGE 9 MODE 9 FREQ. 88.88881

10 10/15/74 MMK-027. = 0.00310000



PHASE 0 CRIBTER FURGLADE-SYMM CASE3 MODEL 2  
 SKIING HALF EFF.LONG.7881 EFF.TRANS.AT WING (0.5/2027.)  
 CRIBTER FREE FREE MODES  
 MODAL SECTOR. SUBCASE 10 MODE 10 FREQ. 78.71648

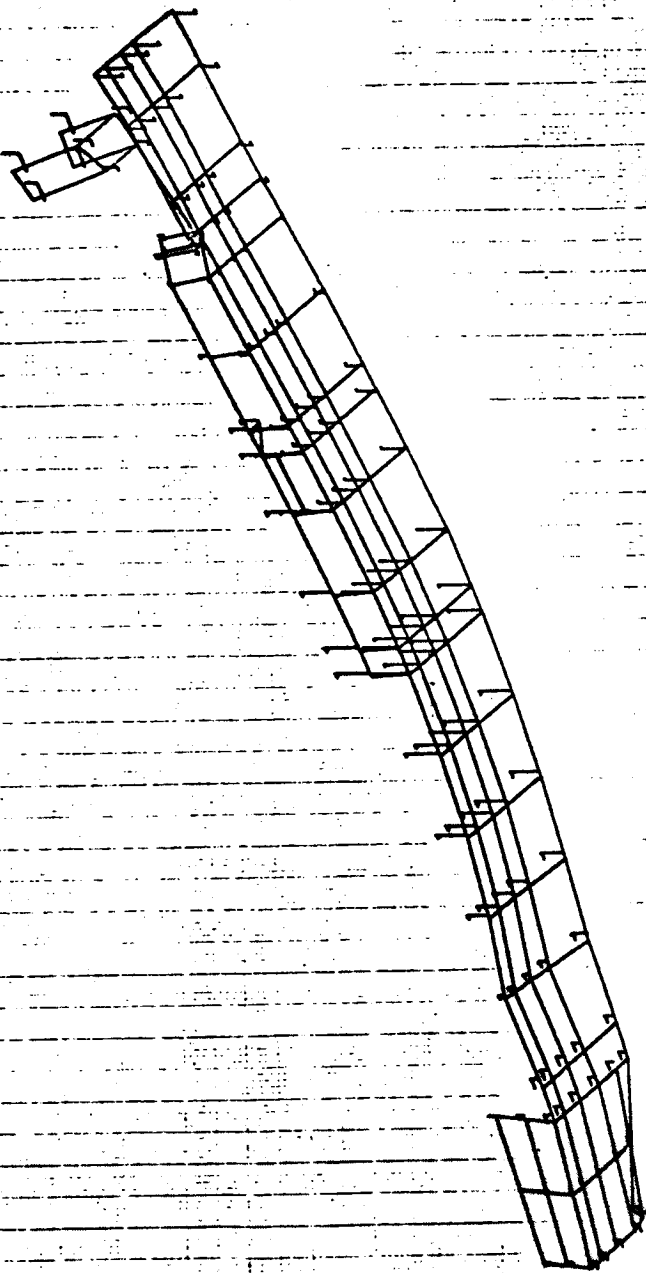
10 10/10/74 1430-007, - 0.00010000



PHASE 2 CONSIDER FUEL-LINE-STEAM CASES W/DC. 2  
CRIME HALF EFF. L.O.-0.1801 EFF. TRANS. AT WIND-0.2/0.077.  
CRIME FREE FREE M-000  
WILL ORDER DISCARD TO NOTE 10 FROM 10.71040

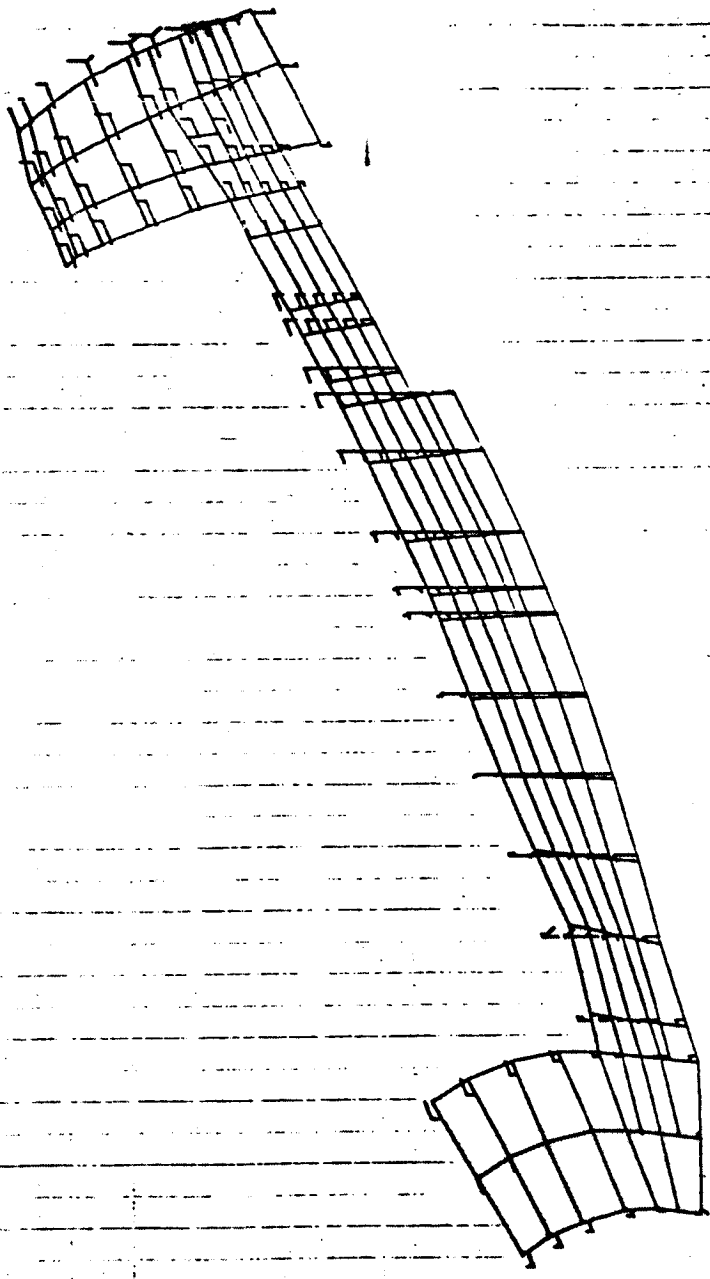
11

11 10/10/74 1000-007, • S. STATION

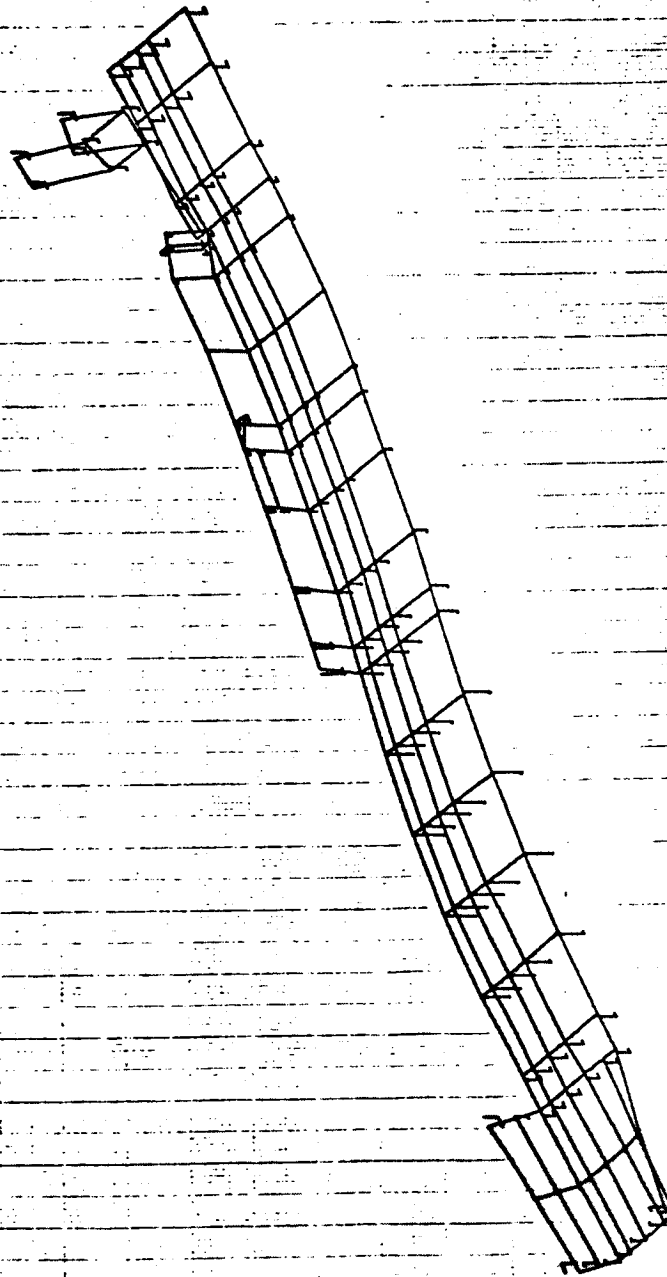


PHASE 2 ORBITER FUSELAGE-SPYGLASS CASE) MODEL 2  
 SKINING HALF EFF. LONG. 88 ( EFF. TRANS. AT WING 10-2/80FF.)  
 ORBITER FREE FREE MODES  
 MODAL QCFOR. SURFACE 11 MODE 11 FREQ. 89.11106

100/100 100 MAX-DET, = 0.870180



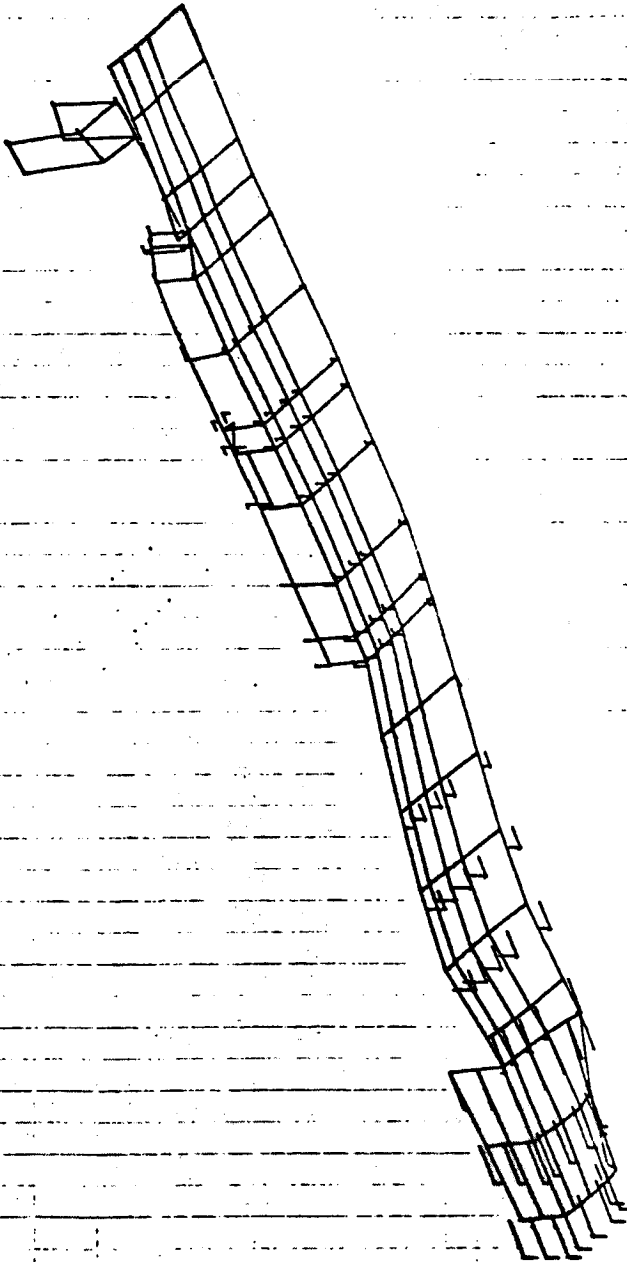
PHASE 3 CORBITER PURCHASE-PTM CASE MODEL 2  
SKING HALF ETT LONG, 881 ETT TRANS AT WING (8-8/8077.)  
CORBITER FREE FREE MONKE  
MEDAL DETOR. SUBCASE 11 MONKE 11 PREQ. 83.11108



PLANE 3 CRIBSTER FUSELAGE-0700 CASE) MODEL 2  
 SKINS HALF EFF. LONG. .85 ( EFF. TRANS. AT WING (0.2/3EFF.)  
 CRIBSTER FREE FREE MODES  
 MODAL DEFOR. SUBCASE 12 MODE 12 FREQ. 104.7841

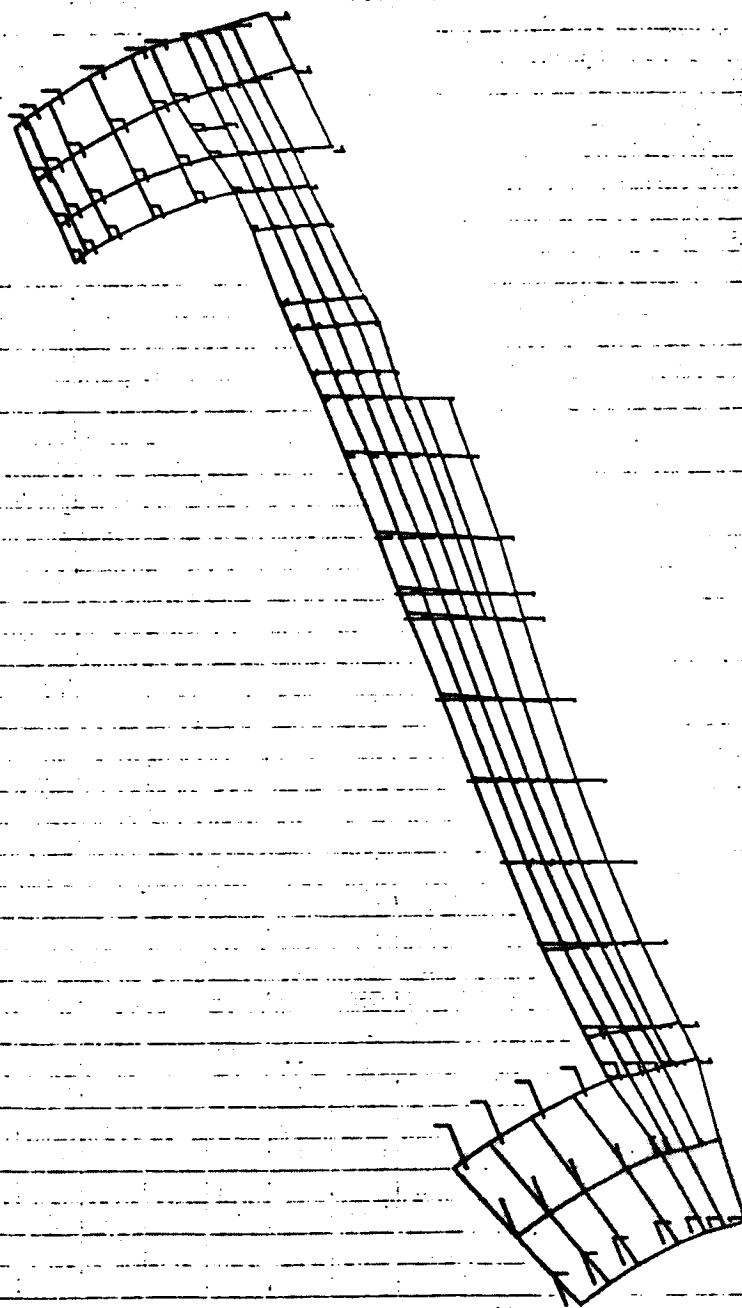


10 10/10/74 100-007, 0 1.0000000

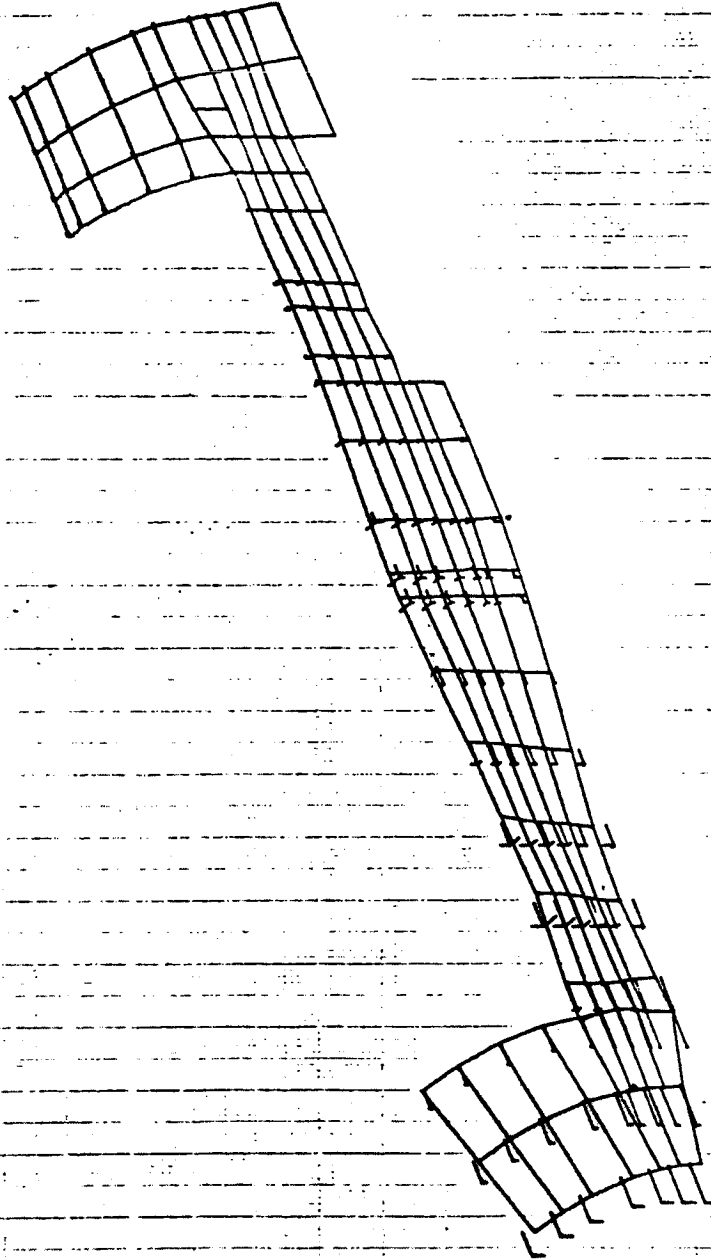


PHASE 3 CRIBITER FURCLADE-0744 CASE) MODEL 2  
BEING HALF EFF. LONG. .98 ( EFF. TRANS. AT WING (0-2/0077.1)  
CRIBITER FREE FREE MODES  
MODAL DETER. SURFACE 13 MODE 13 FREQ. 116.6378

12 10/11/74 1000-207. - 0.41147003

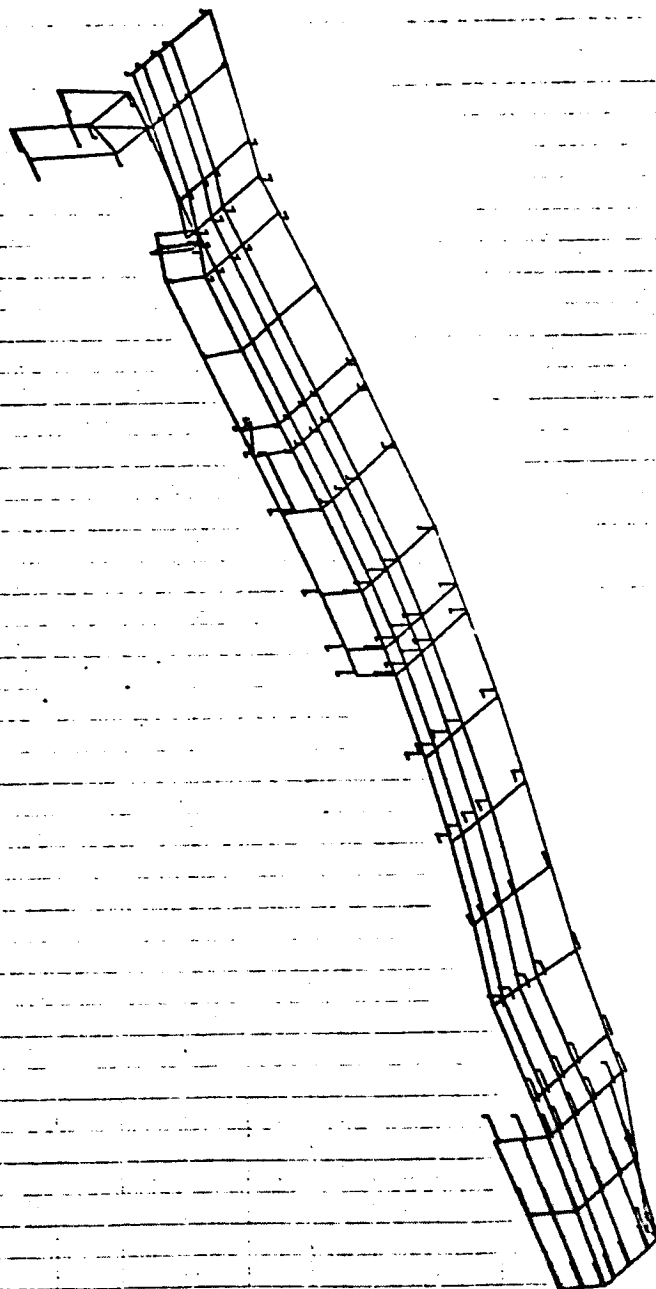


PHASE 3 CRUSITER FUEL/BLANK-SPIN CASE) MODEL 2  
 SETTING HALF EFF. LONG. 0.81 EFF. TRANS. AT WING 0.8/0.877.  
 CRUSITER FREE FREE MODES  
 MODAL ORDER. SURFACE 12 MODE 12 FREQ. 104.7841

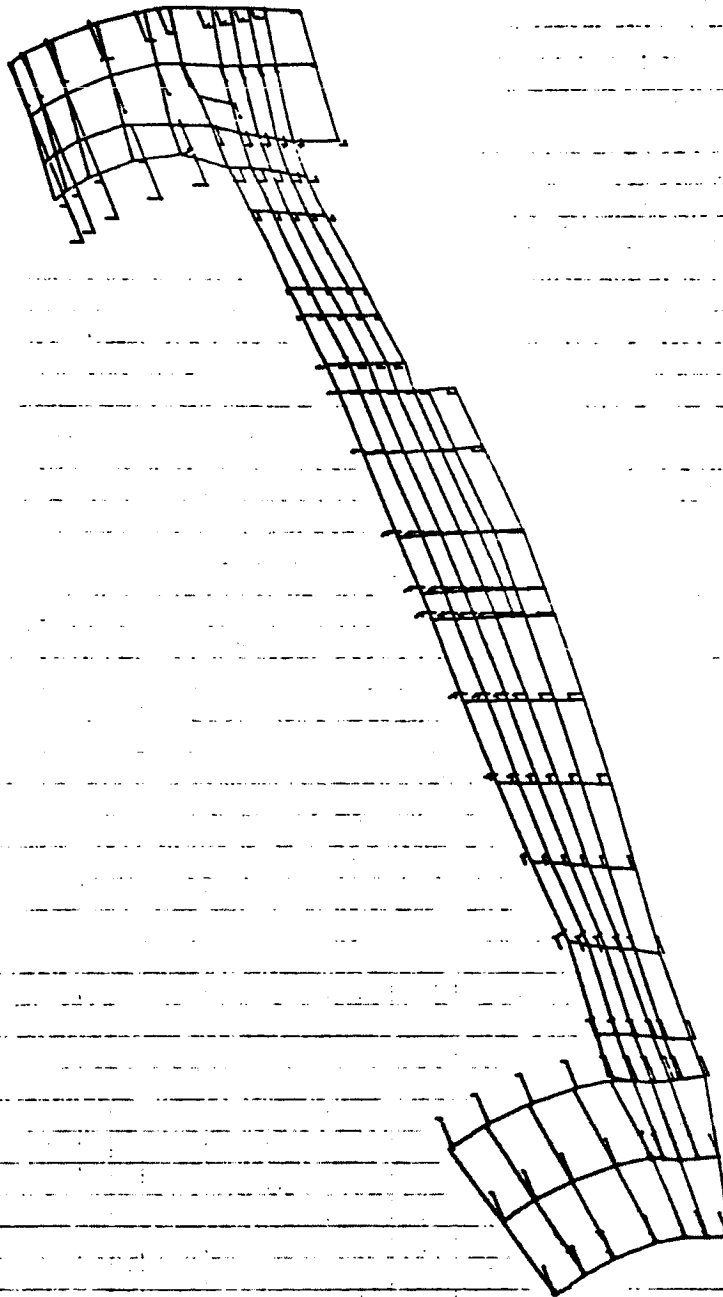


PHASE 3 ORBITER FUSelage-SYM CASE) MODEL 2  
 SKINS HALF EFF. LONG. 88% EFF. TRANS. AT WING (0-2/3877.)  
 ORBITER FREE FREE MODES  
 MODAL DEFOR. SUBCASE 13 MODE 13 FREQ. 118.8276

14 12/15/74 MMS-007. = D.00410492

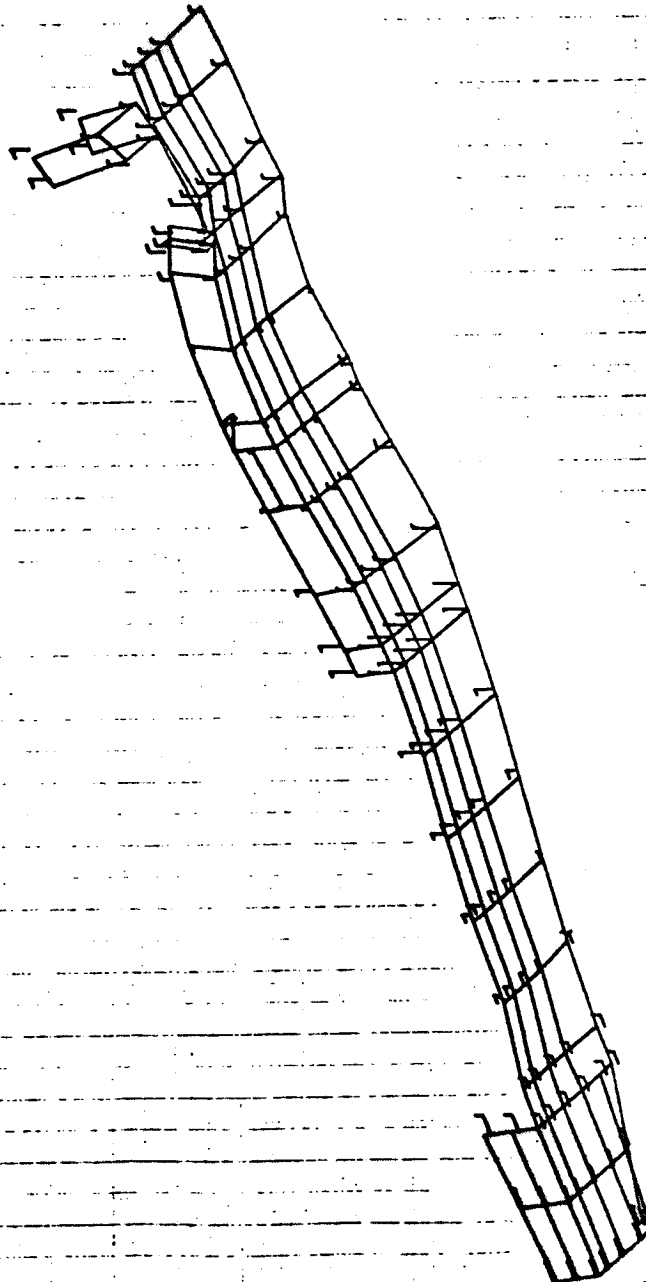


PHASE 3 (ORBITER FUEL/AIRC-BYAM CASE) MODEL 3  
 BEING HALF EFF. LONG. 88 (EFF. TRANS. AT WING (8-2/3277.))  
 ORBITER FREE FREE MODES  
 MODAL DEFOR. SUBCASE 14 MODE 14 FREQ. 122.2084



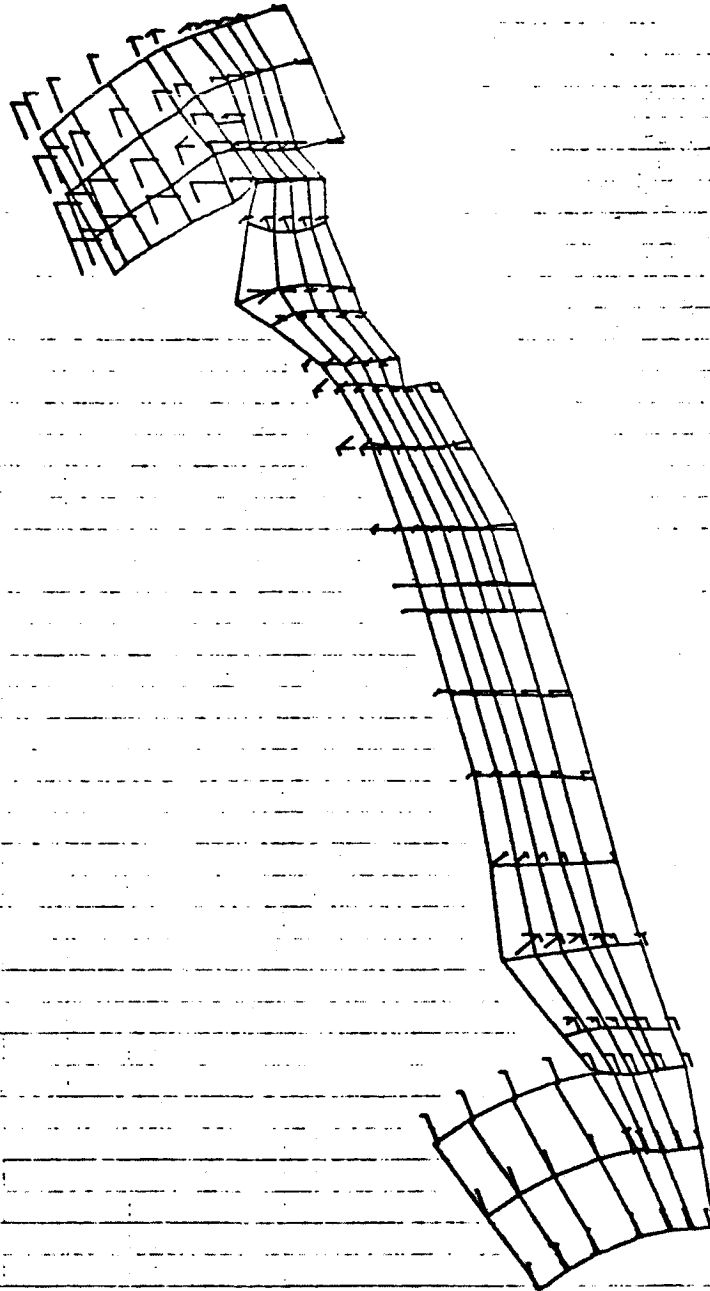
PHASE 3 CRIBITER FUSELAGE-SYMM CASE) MODEL 2  
 BEING HALF EFF. LONG. OSC EFF. TRANS. AT WING (0.2/2EFF.)  
 CRIBITER FREE MODES  
 MODAL DEFOR. SUBCASE 14 MODE 14 FREQ 123.8084

10 10/10/74 1000-007, - G. 00700000



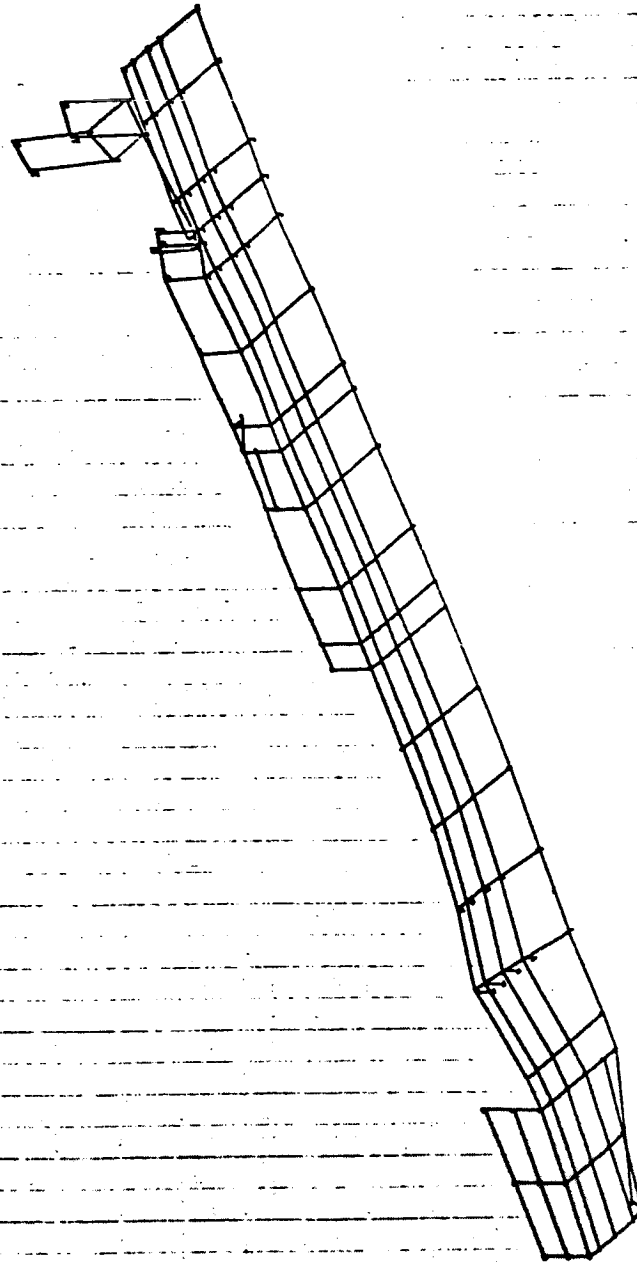
PHASE 3 CRIBITER FUELAGE-SYMA CASE) MODEL 2  
 BEING HALF EFF. LONG. .88 ( EFF. TRANS. AT WING 0.5/0.077.)  
 CRIBITER FREE FREE MODES  
 MODAL ORDER. SUSCASE 15 MODE 15 FREQ. 124.4431

10 10/11/74 1000-007, 0 00710000



PHASE 3 ORBITER FUELAGE-SYMM CASE) MODEL 2  
 SKINS HALF EFF. LONG. 88 ( EFF. TRANS. AT WING (0-2/3277.)  
 ORBITER FREE FREE MODES  
 MODAL DEFORM. SUBCASE 10 MODE 10 FREQ. 124.9431

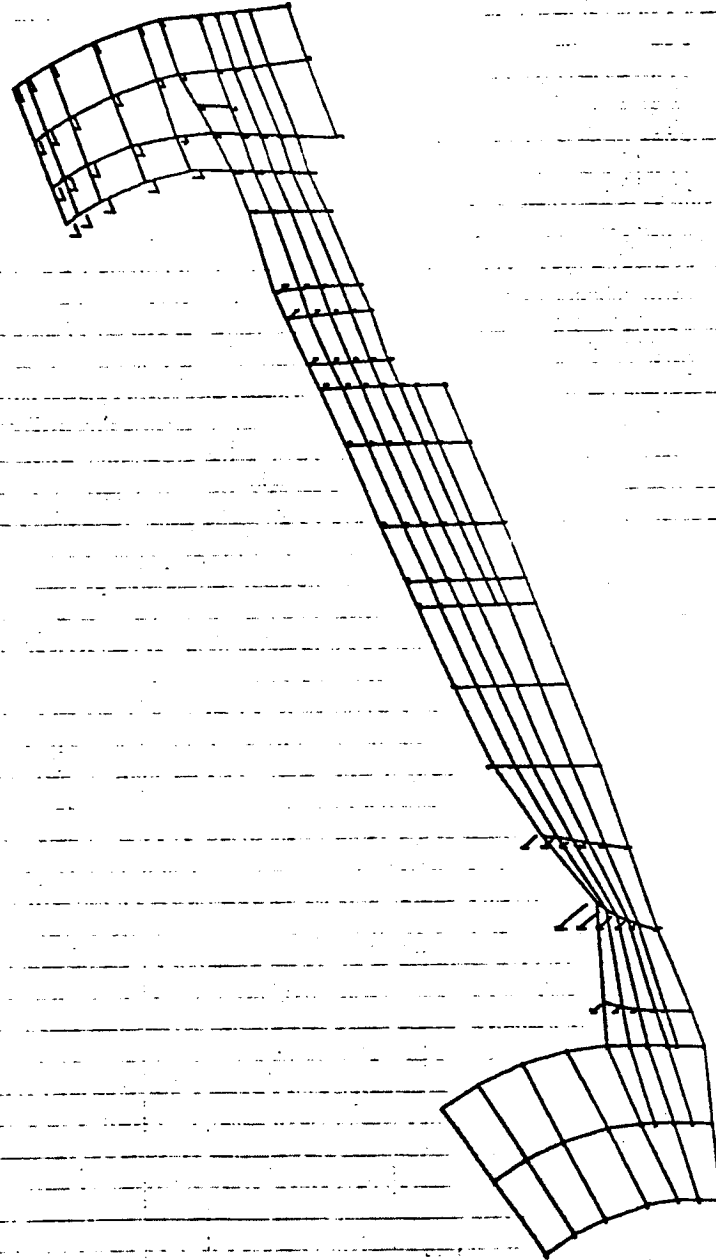
16 10/18/74 WAC-207, = 0.00701004



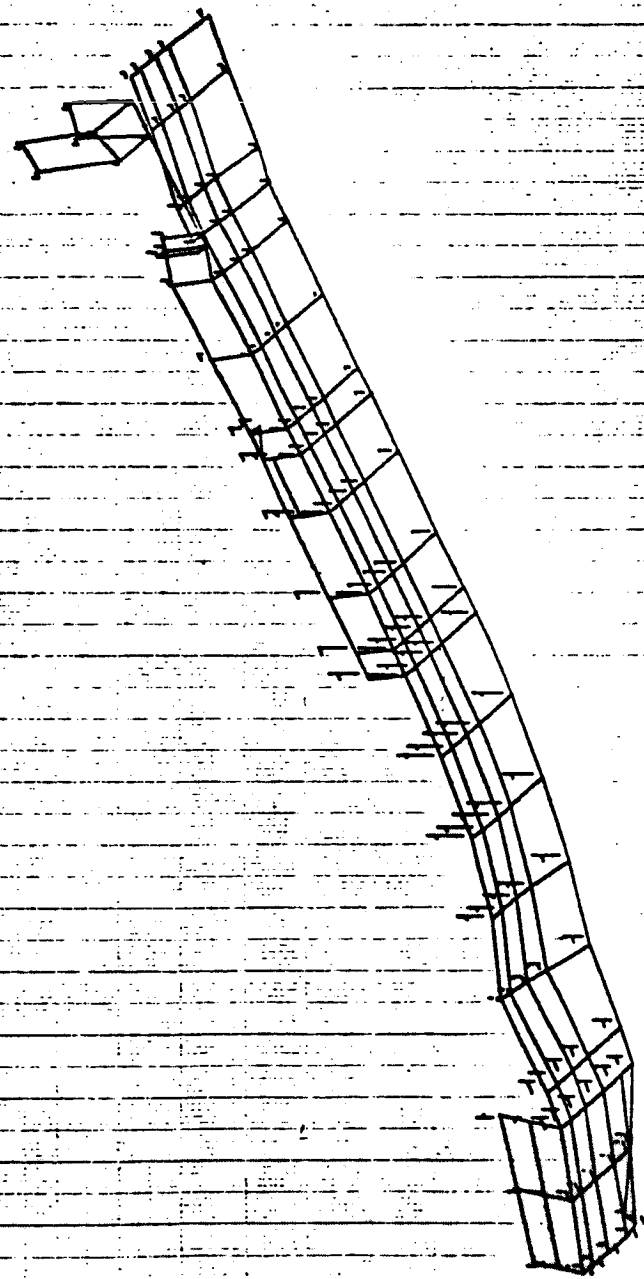
PHASE 3 ORBITER FUELAGE-STAM CASE) MODEL 2  
 BEING HALF EFF. LONG. 88 ( EFF. TRANS. AT WING 0-2/2 EFF. )  
 ORBITER FREE FREE MODES  
 MODAL DEFORM. SUBCASE 10 MODE 16 FREQ. 130.3033



18/10/74 1000-207. = 0.00721009



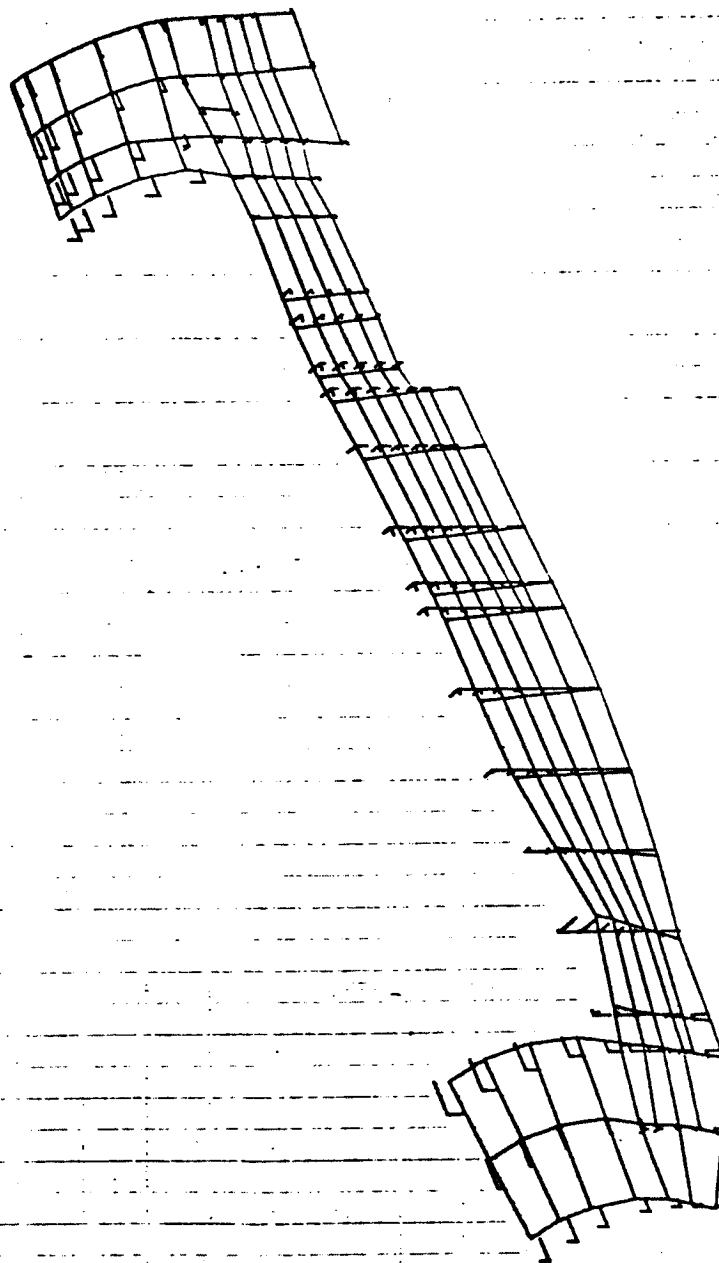
PHASE 3. ORBITER FUSelage-SYM CASE) MODEL 2  
 SKIN HALF ETT.LONG..85( ETT. TRANS.AT WING(8-2/2577.)  
 ORBITER FREE FREE MODES  
 MODAL DEFOR. SUBCASE 16 MODE 16 FREQ. 130.2833



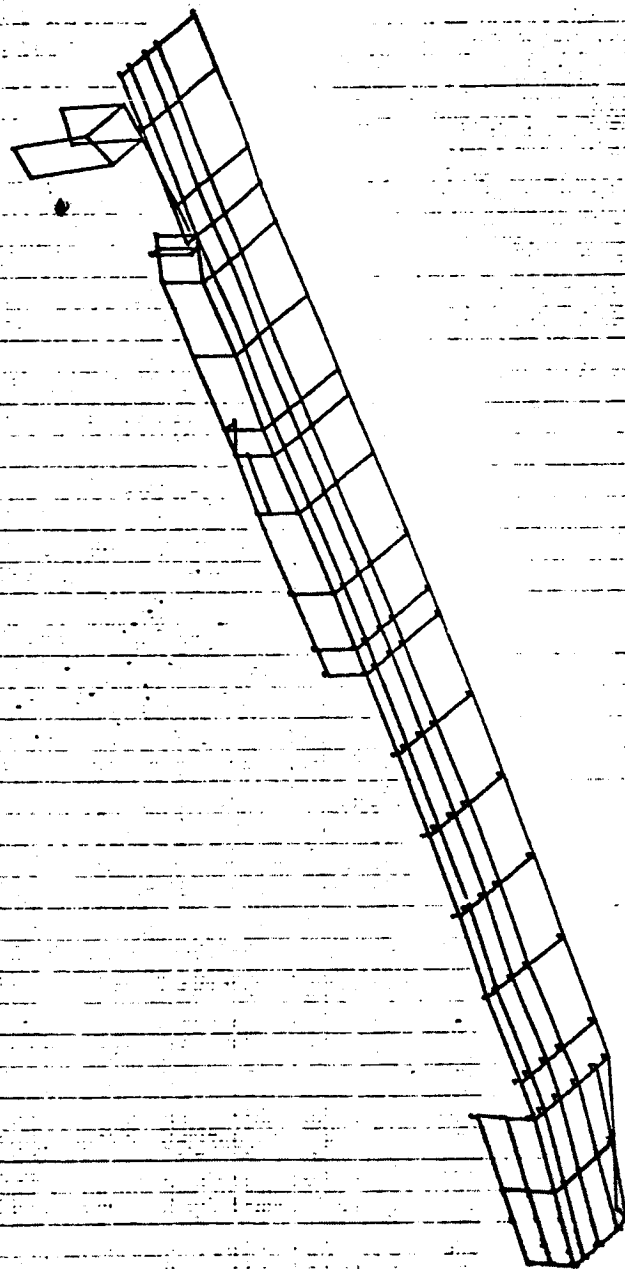
PHASE 9 COMPUTER FUELAGE-SYM CASE3 MODEL 2  
 SKIN HALF EFF. LONG. 88 ( EFF. TRANS. AT WING 00-2/80FF.)  
 ORBITER FREE FREE MODES  
 MODAL DFCOR. SUBCASE 17 MODE 17 FREQ. 142.1368

17

17 10/11/74 MM-227. - 0.3700040

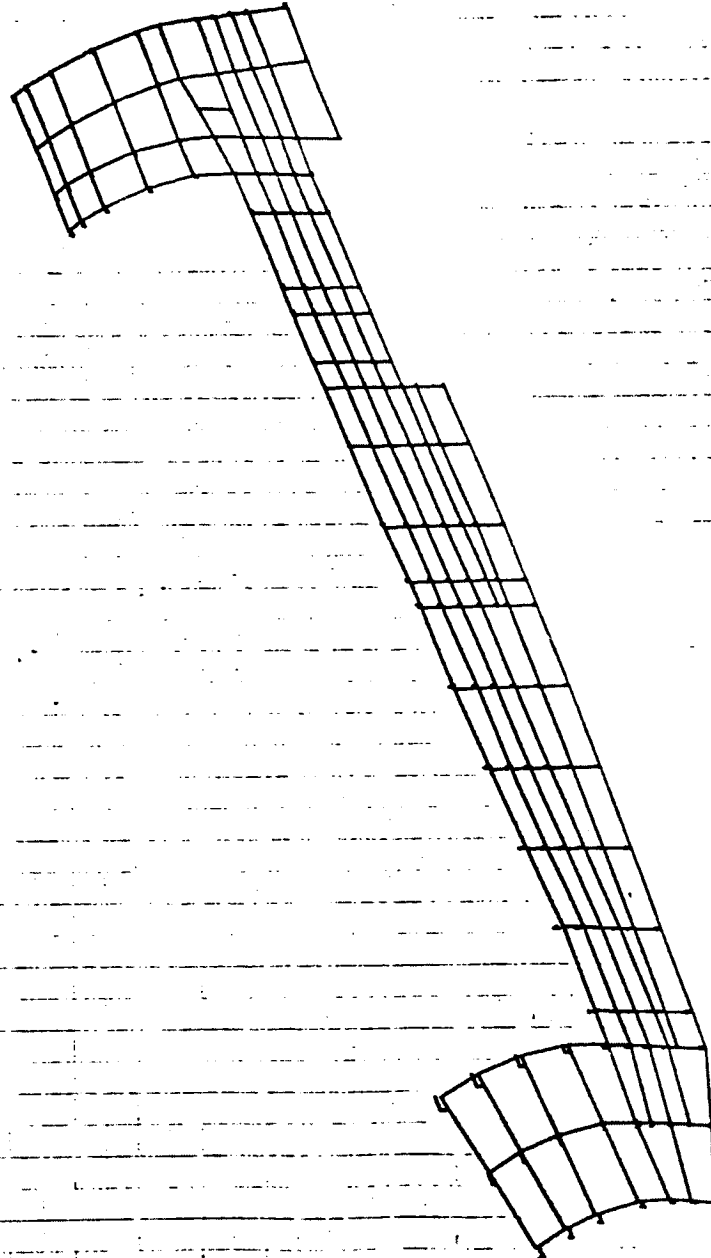


PHASE 9 CRIBITER PURCHASE-SYAM CASE) MODEL 2  
 SKINS HALF ETT, LONG, .081 ETT, TRANS. AT WING (0.2/0.277.)  
 CRIBITER FREE FREE MODES  
 MEDAL DETON. PURCHASE 17 MODE 17 PRGO. 142.1350



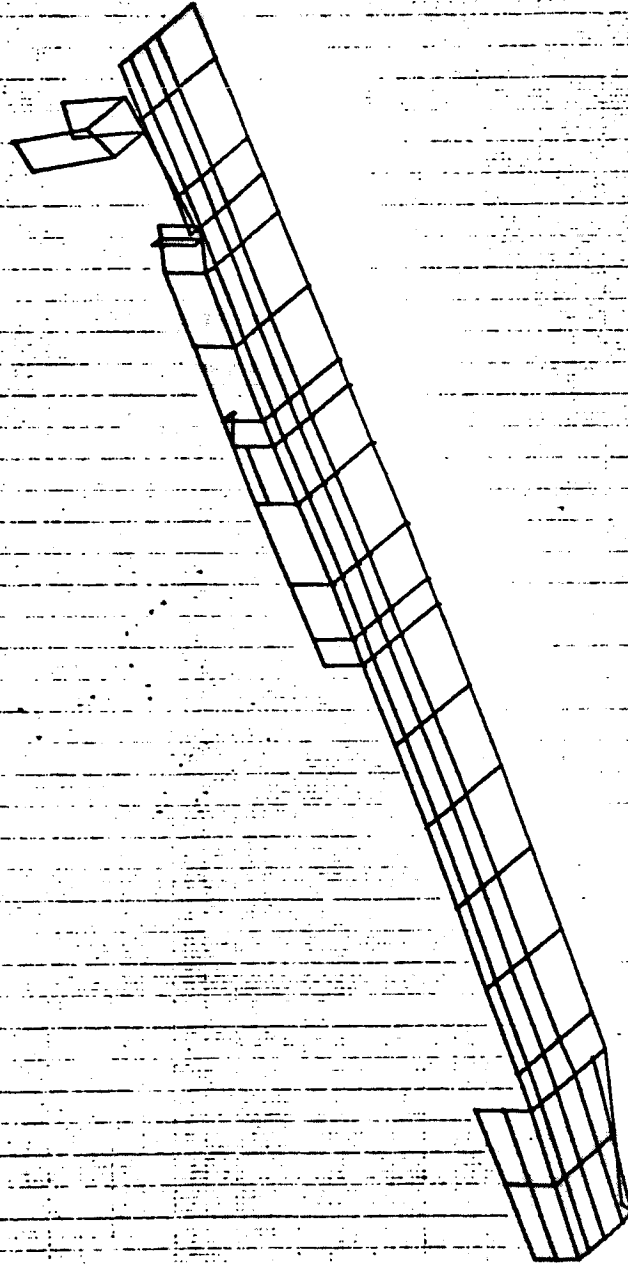
PHASE 9 CORBITER FUSELAGE-BYAM CASE) MOD. 2  
 SKING HALF CTF.LONG.00 ( CTF. TRANS. AT WING (0.5/3007.)  
 CORBITER FREE FREE MEMO  
 MODAL DETON. SUBCASE 10 MODC 10 FREQ. 159.8007

10 10/15/74 MAX-DEF. = 0.1100904



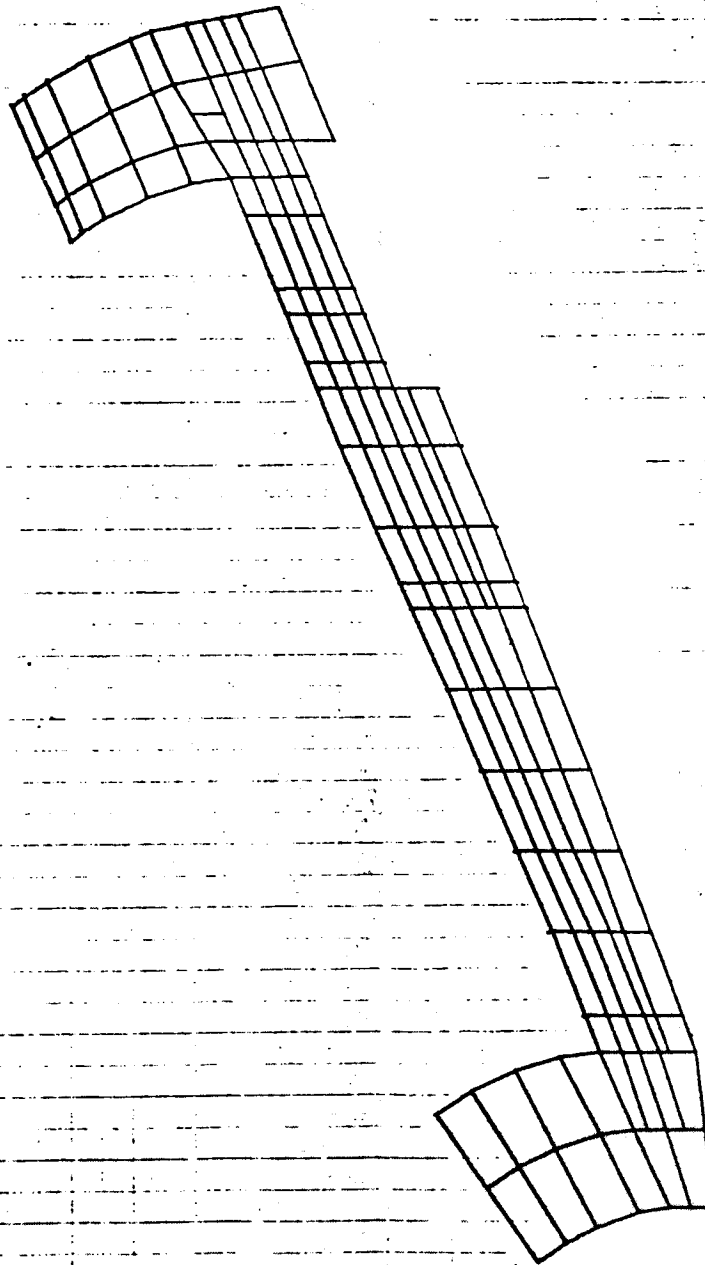
PHASE 3: CRISITER PUSCARE-STAN CASE) MODEL 2  
 BEING HALF ETT LONG. 1.98 ( ETT TRANS. AT WING (0-5/2007.))  
 CRISITER FREE FREE MODES  
 MODAL DEFOR. SURCASE 18 MODE 18 FREQ. 187.8381

19 10010/74 10010/74 - 0.10010000

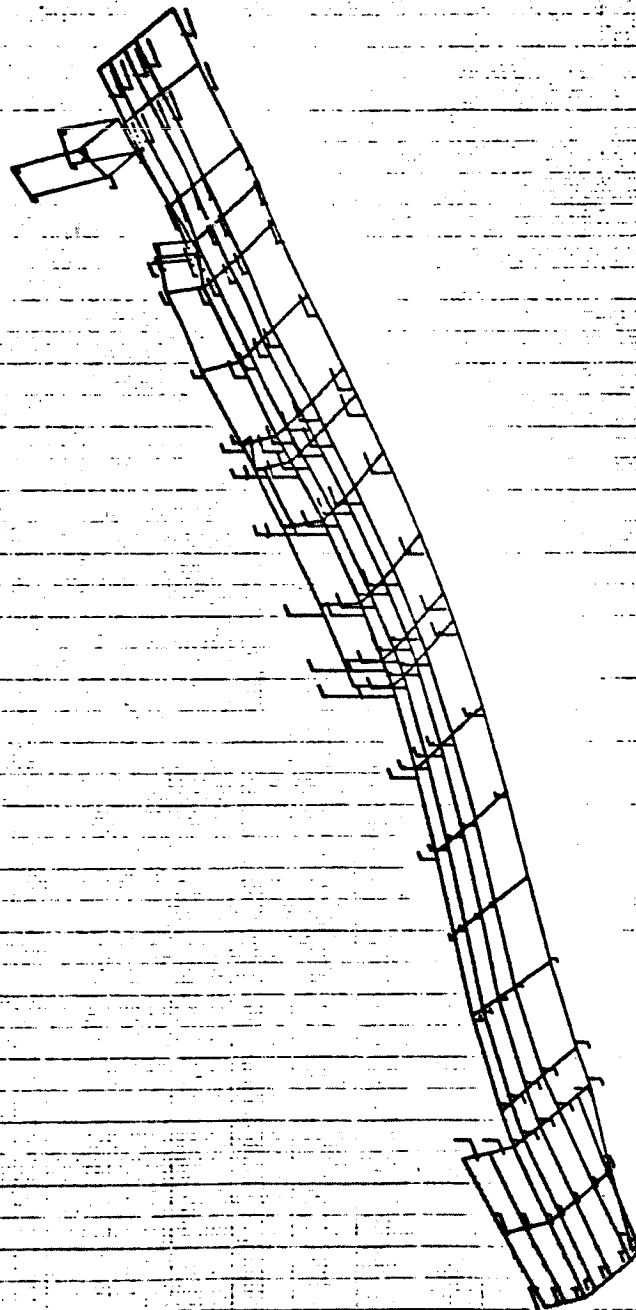


PHASE 3 CRIBITER FUELAGE-9744 CASE) MODEL 2  
 SKING HALF DT. LOW. 00 ( DT. TRANS. AT WING 0-2/2077.1)  
 CRIBITER FUEL FUEL MEXES  
 MEDAL DEFOR. SUBPAGE 19 MODE 19 PRCD. 100.3002

14 10/15/74 1000-007, a 0.10010000



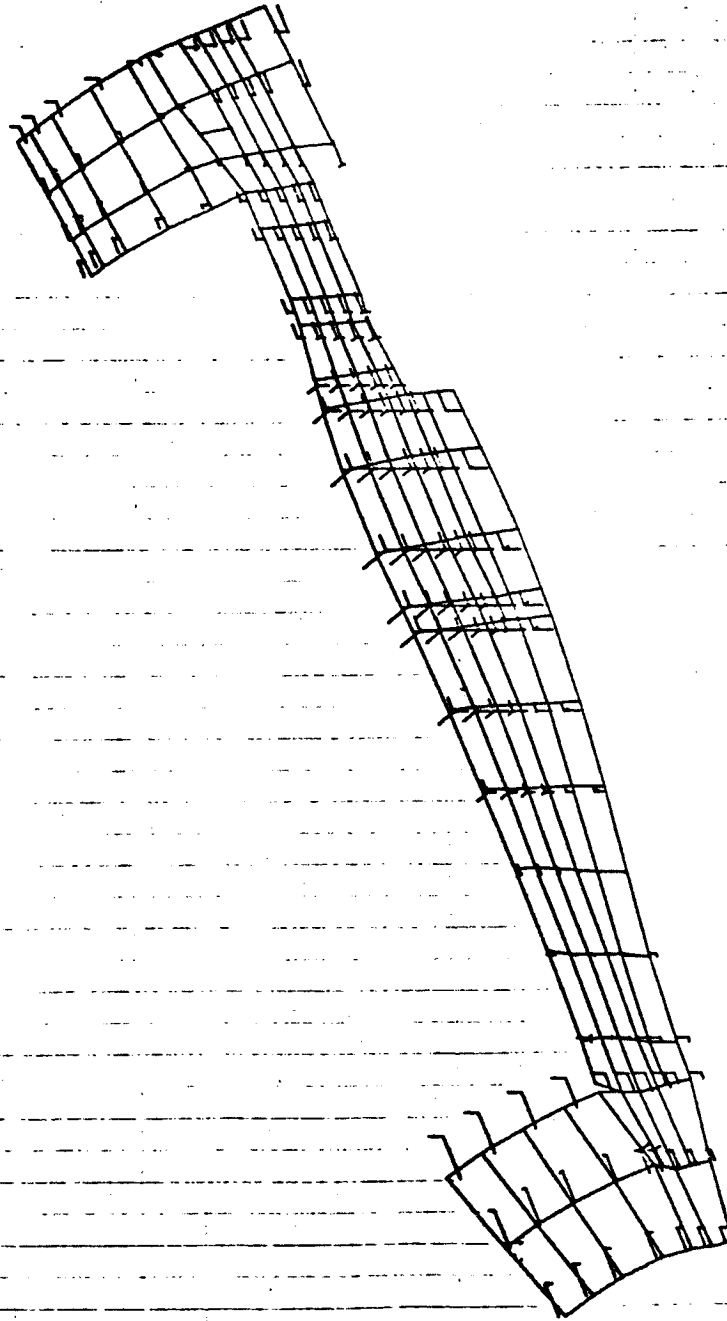
PHASE 8 ORBITER FUELAGE-8700 GASE) MODL 2  
 SKINS HALF CTF.LONG.08 ( CTF,TRANS.AT WING (0-2/8CTF.)  
 ORBITER FREE FREE MODS  
 MODAL OFFER, SUBCASE 14 MODL 14 FREQ. 100.0002



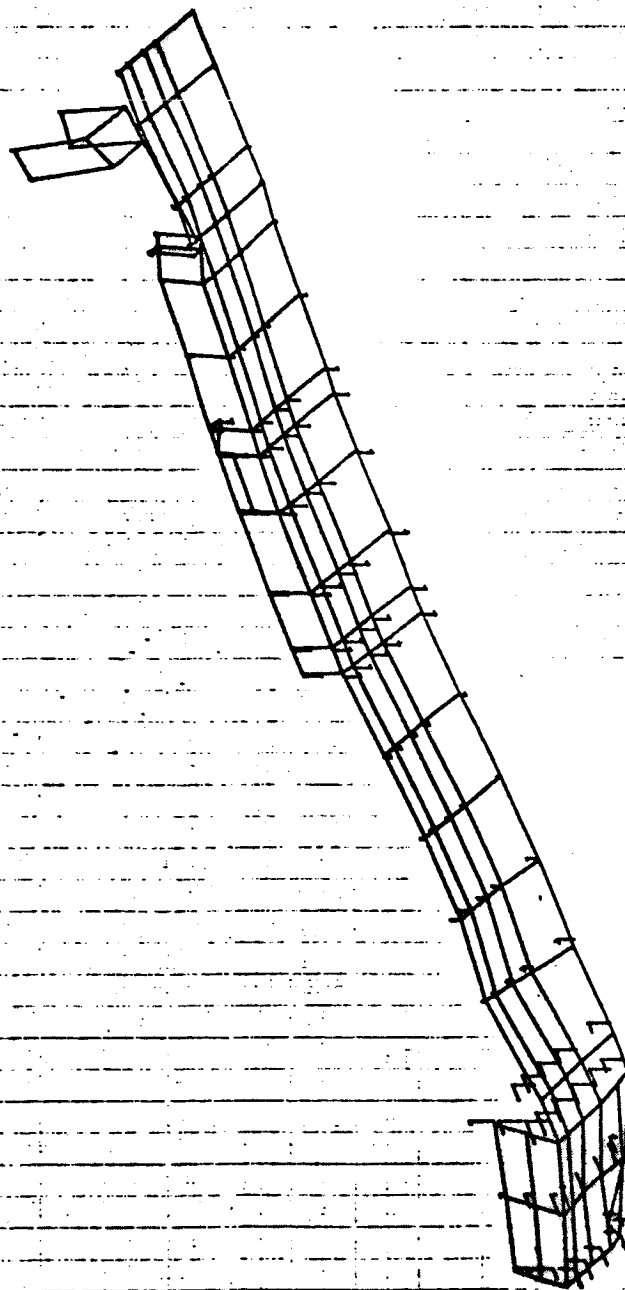
PHASE 3 CONSIDER PURCHASE-STYAL CASE) MODEL 2  
 SKINS HALF EFF. LONG. SEC EFF. TRANS. AT WING 00-2/3/277.7  
 CONSIDER FREE PRICE INDEX  
 MODAL DEFOR. SURFACE 20 MODE 20 FREQ. 171.7384



20 10/19/74 MAX-DET. = 0.61500500

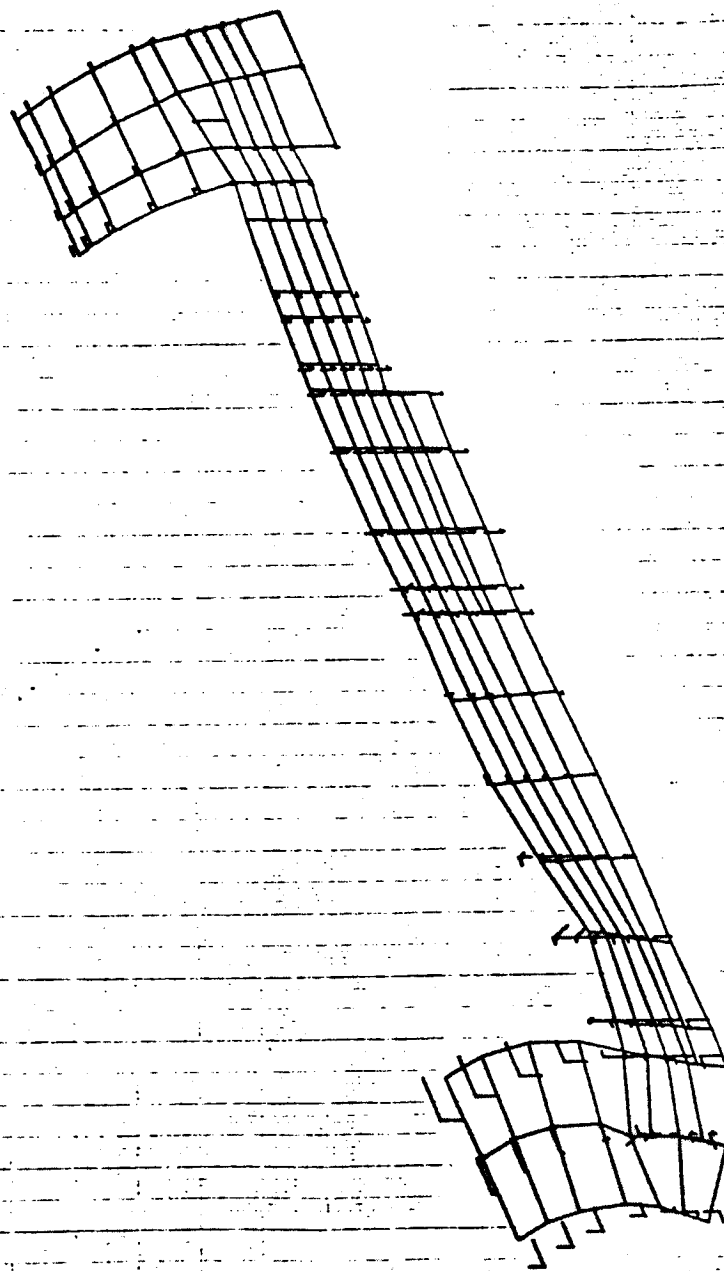


PHASE 3 CRIBITER FUSELAGE-87MM CAPS) MODEL 2  
 BRKING HALF EFF. LONG. 86 ( EFF. TRANS. AT WING (8-2/3 EFF.)  
 CRIBITER FREE FREE MODES  
 MODA. DETON. SUBCASE 20 MODE 20 FREQ. 171.7384



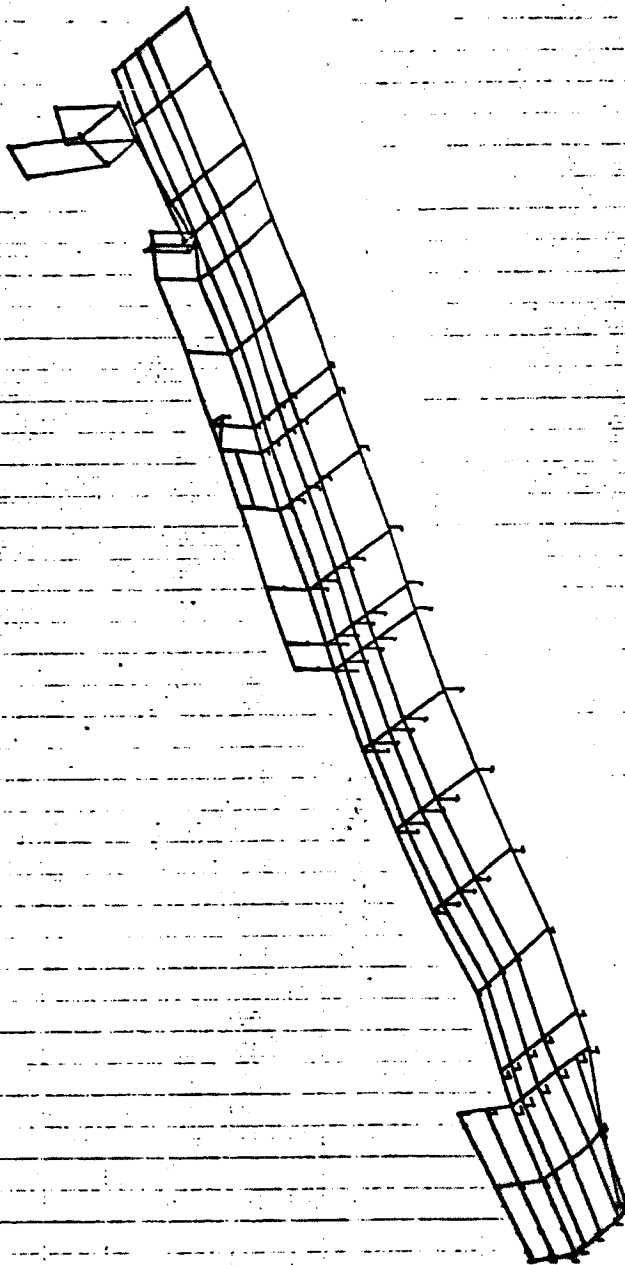
PHASE 2. CRUISED FUELAGE-0700 CASE) MODEL 2  
 BEING HALF 107. LONG. 001 ETT. TRANS. AT WING 0-2/007. 2  
 CRUISED FUELAGE FREE MODES  
 MODAL ORDER. SURFACE 21. MODE 21. FREQ. 100.4040

21 10/10/74 1000-007, = 0.70561024



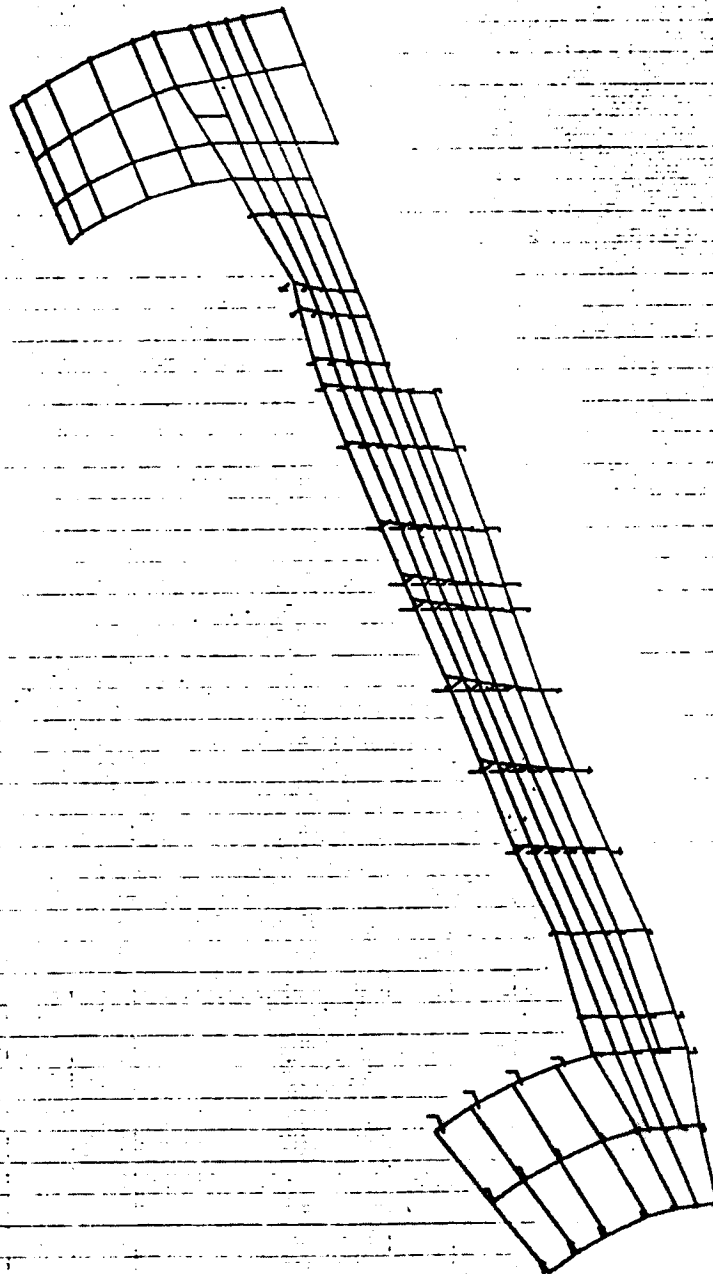
PHASE 2 ORBITER FUNDAMENTAL-8744 CASE MODEL 2  
 SKIN WLF CTF, LONG, 180 CTF, TRANS, AT WING (0-2/3077, 1)  
 ORBITER FREE FREE MODES  
 MODAL VECTOR, SUBCASE 21 MODE 21 FREQ. 180.4840

22 10/10/74 100-007, 0 0.0011001



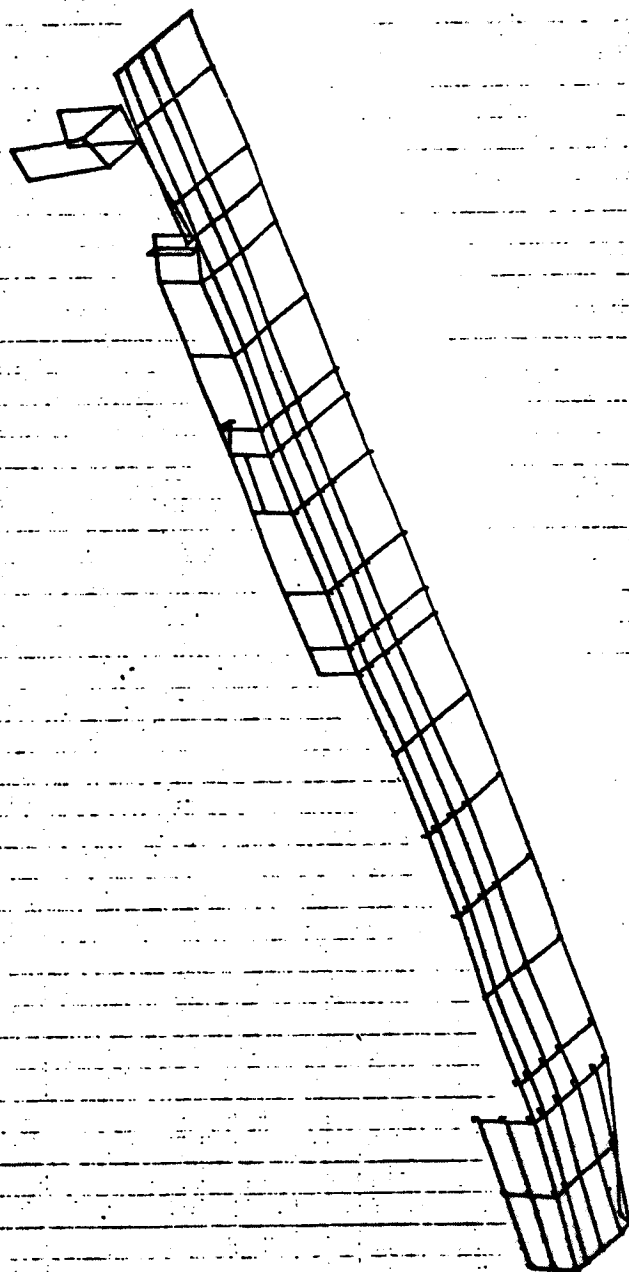
PHASE 0 CORRIGED FUSELAGE-STRUT CASE) MODEL 2  
 SKIN HALF EFF. LONG. 001 EFF. TRANS. AT WING 00-0.0077.1  
 CORRIGED FUSELAGE FUSELAGE  
 MODAL DEFOR. SUBCASE 22 MODE 22 FREQ. 140.2285

10/19/74 1000-007. - 0.02112421

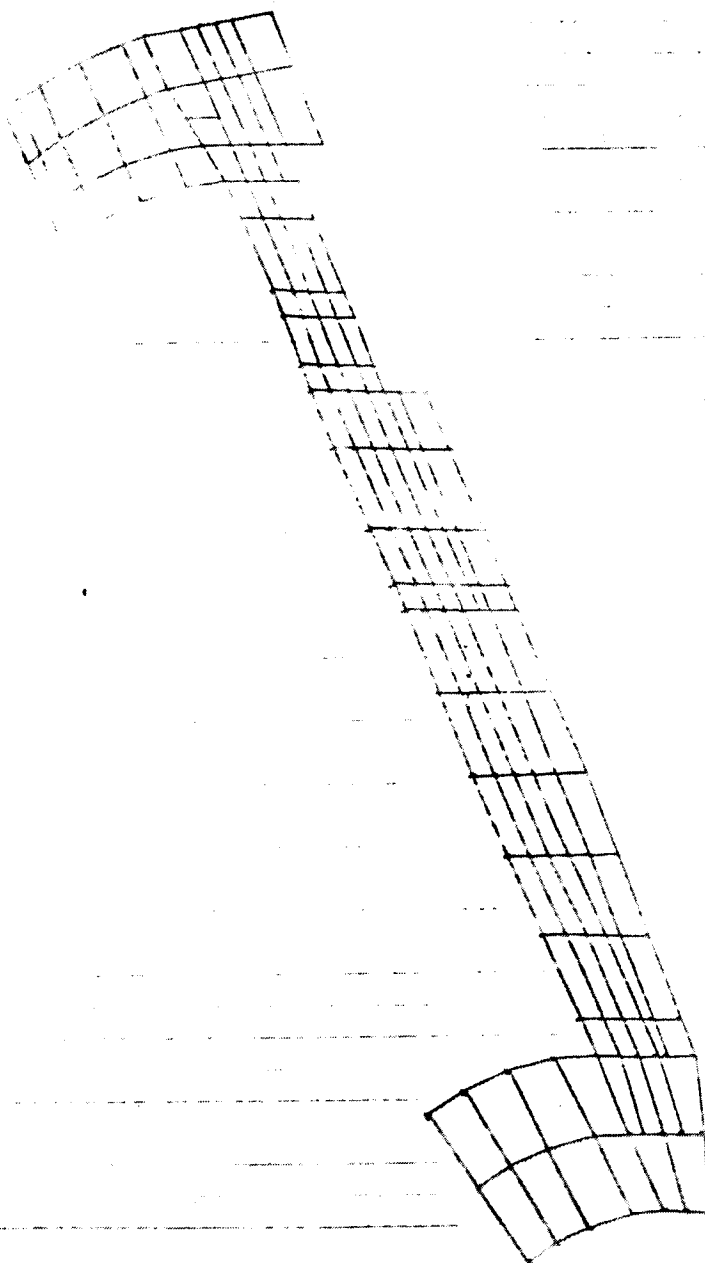


PHASE 2 ORBITER PURCHASE-PYRAM CASE) MODEL 2  
 SKINS HALF EFF. LONG. .85 ( EFF. TRANS. AT WING (0.82/2EFF. )  
 ORBITER FREE FREE MODES  
 MODAL DETER. SURFACE 22 MODE 22 FREQ. 140.2363

20 10/10/74 1000-007. = 0.00000000



PHASE 3 CRUISER FUSelage-OTM CASE) MODEL 2  
 SKINS W/100 EFT-LOW, .001 EFT, THIN, AT 1100-0-2/2077.  
 CRUISER FUSELAGE FREE MODES  
 MODAL ORDER, SUBCASE 23 MODE 23 FREQ. 284.0014



PHASE 3 ORBITER SURFACE-SYMM (ABC) 10000 8  
 SKIN - HALF OFF, LONG, .85 (EFF. TRANS. AT WING 0.2/3177.1)  
 ORBITER FREE FREE MODES  
 MOD. 1 OFFOR. SURFACE 23 MODE 23 FREQ. 22.1, 08.14

**Appendix B15**  
**INPUT & PLOTS/PHASE 3 ANALYSIS: MODEL II WING**  
**SYMMETRIC FREE-FREE ORBITER MODES**



PHASE 3 SCATTER WING  
9/10/74 SCATTERS AS PERCENT FFF.0

CASE CONTROL DECK ECHO

CARD  
COUNT

TITLE # PHASE 3 SCATTER WING

SUBTITLE # 9/10/74 SCATTERS AS PERCENT FFF.0

MAXIMUM # 20000

SUBCASE 1

TABLE # SCATTER FFF FFF MODES

MODES # 23

MODES

MODES # ALL

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

MODES

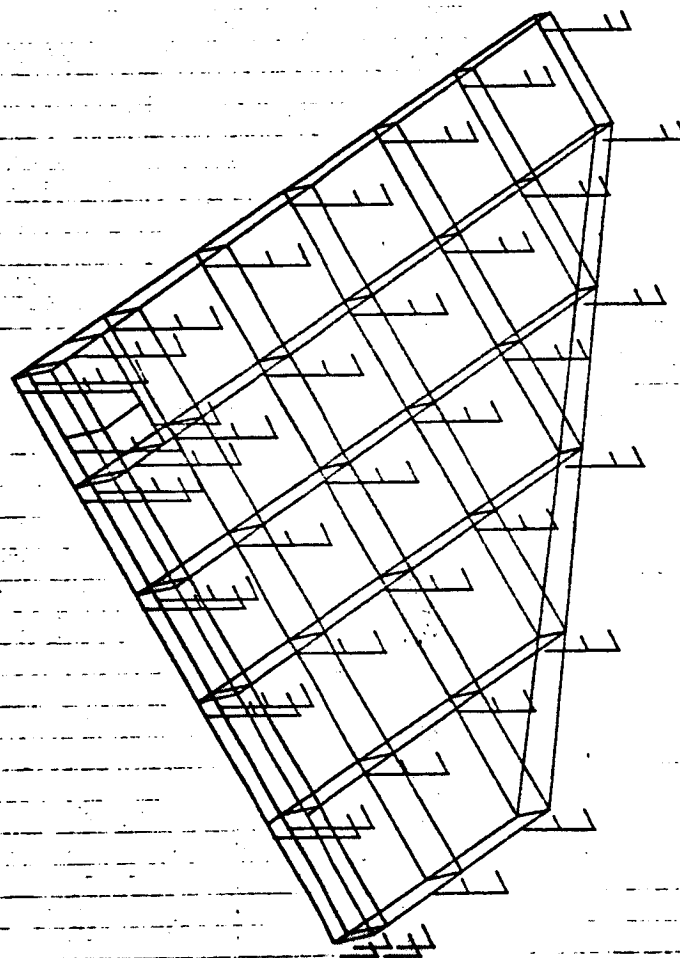
TPNAM TPNAM2 CRTSP2

ENDDATA

THRU 3536.3582

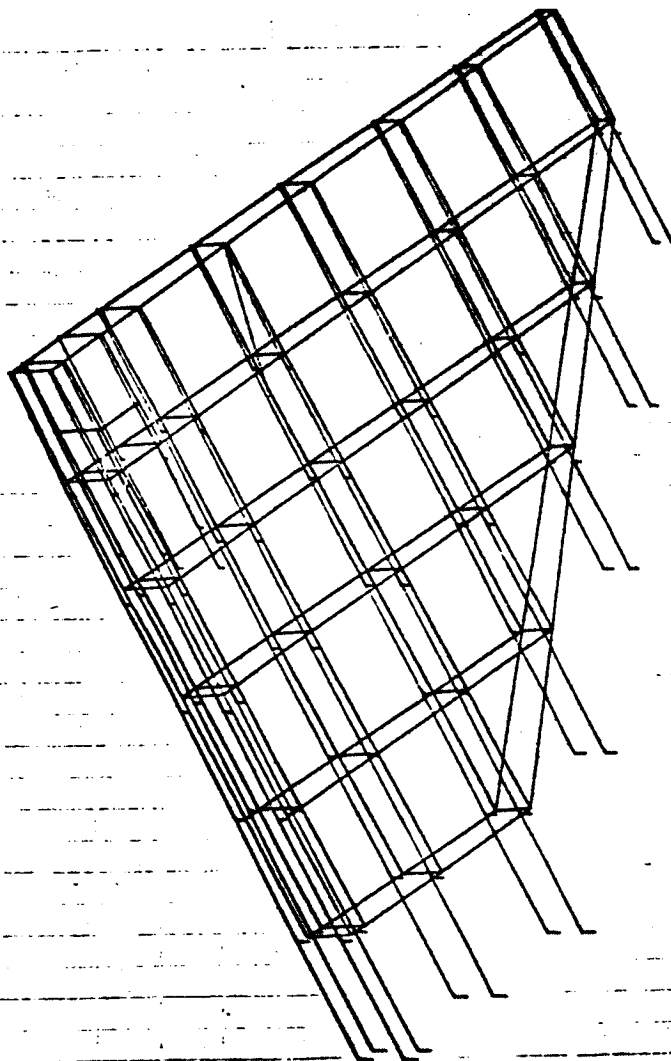
THRU 23.517.0 ORIGIN 2.5 SHAPE VECTOR XY7

10/18/74 000-007, = 0.00014700



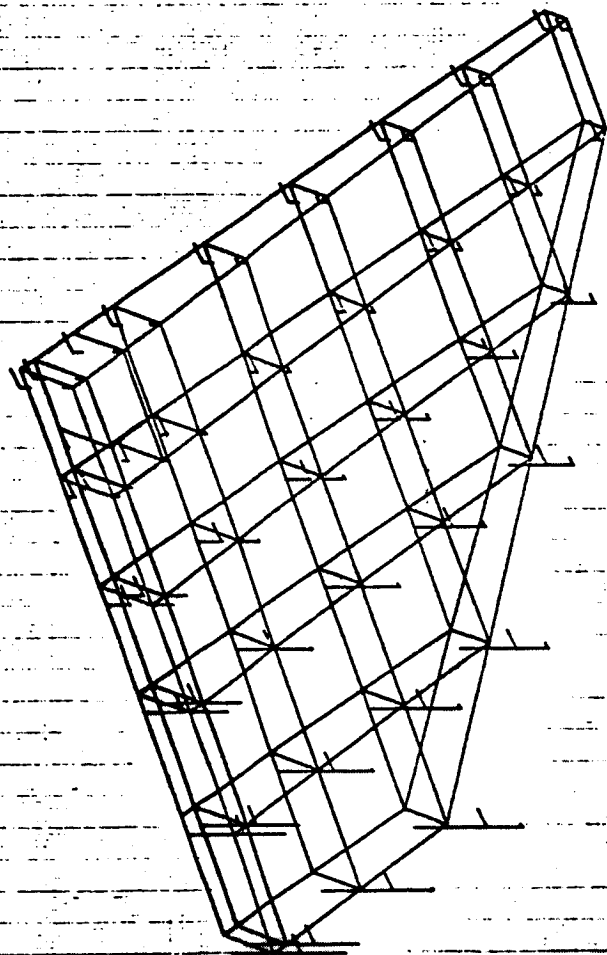
PHASE 3 CORBITER WIND  
4/10/74 (COVERS 99 PERCENT EFF.)  
CORBITER FREE FREE MODES  
MODAL DEFOR. SUBCASE 1 MODE 1 FREQ. 0.

1.2 10/18/74 MAX-DEF. = 0.9410004



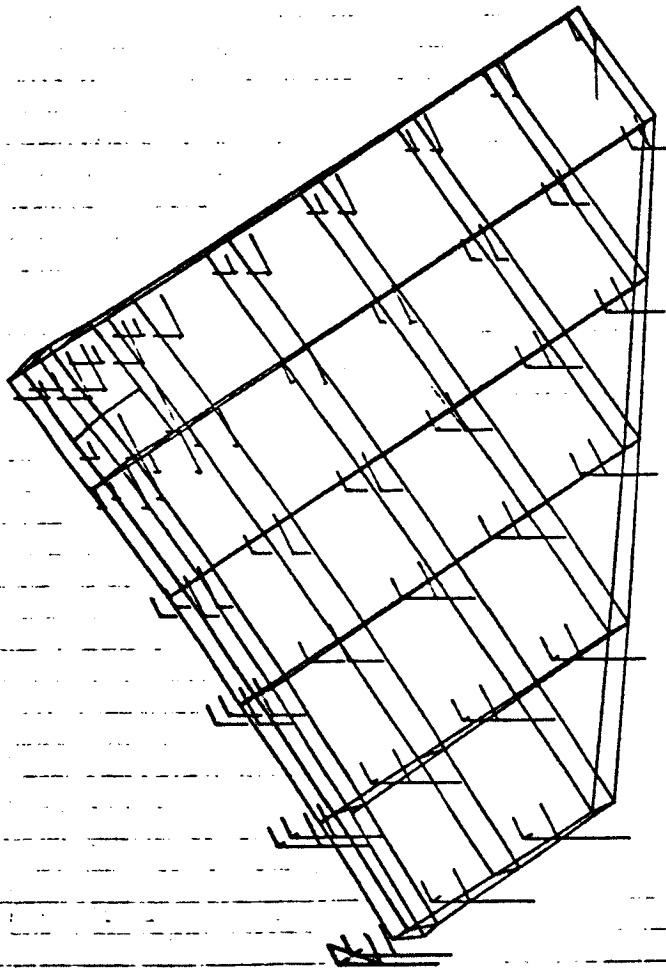
PHASE 2 CONSIDER WINDS  
 4/10/74 COVERED BY PERCENT EFF. 1  
 CRITER FREE FREE MODES  
 MODAL DEFOR. SUBCASE 2 MODE 2 FREQ. 0.

10/10/74 1000-007. - 0.00000004



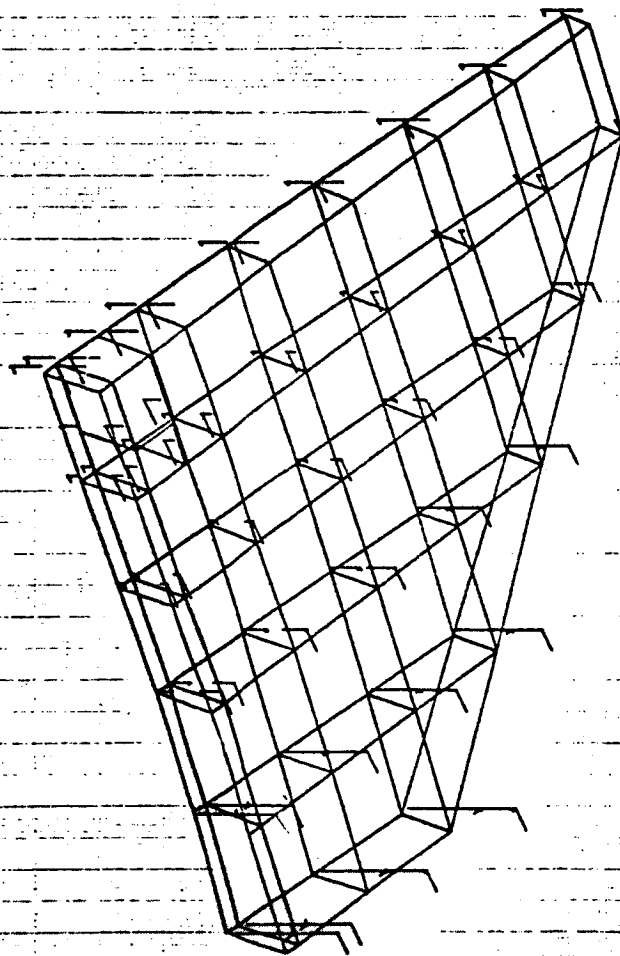
PHASE 9 CONSIDER WIND  
9/10/74 1000-007 05 PERCENT EFF.  
COSTER FREE FREE MONEY  
LOCAL DCTOR. SURFACE 9 1000 9 FREE. 0.

10/18/74 000-007, 0.01770118



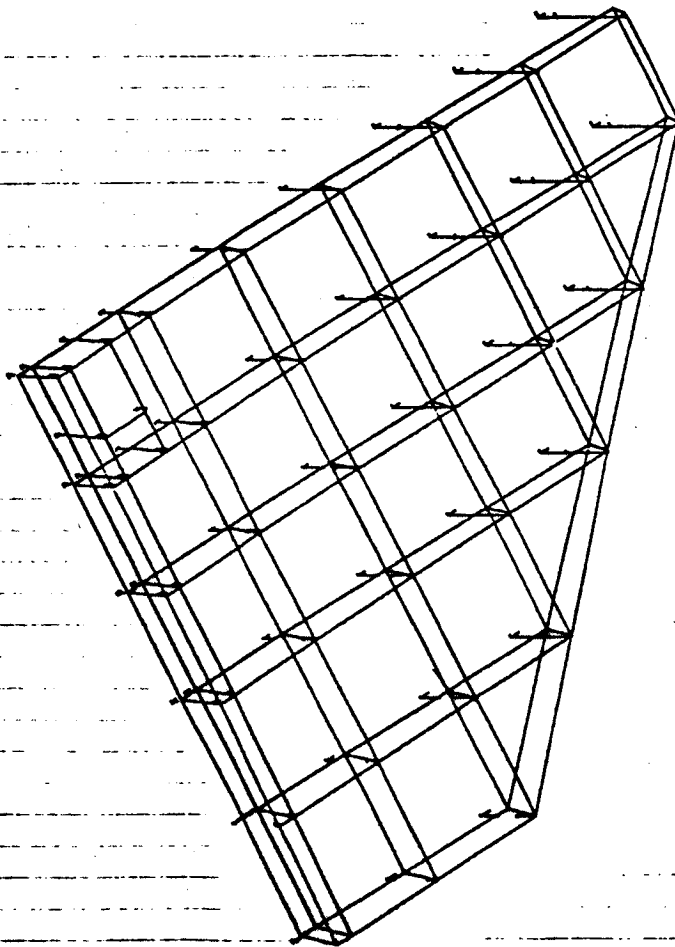
PHASE 3 (COVER WIND)  
4/10/74 (COVER 88 PERCENT EFF.)  
ONBITER FREE FREE MOODS  
MODAL DEFOR. SUBCASE 4 MODE 4 FREQ. 44.11371

10/15/74 MUX-007, o. 0. 0004200



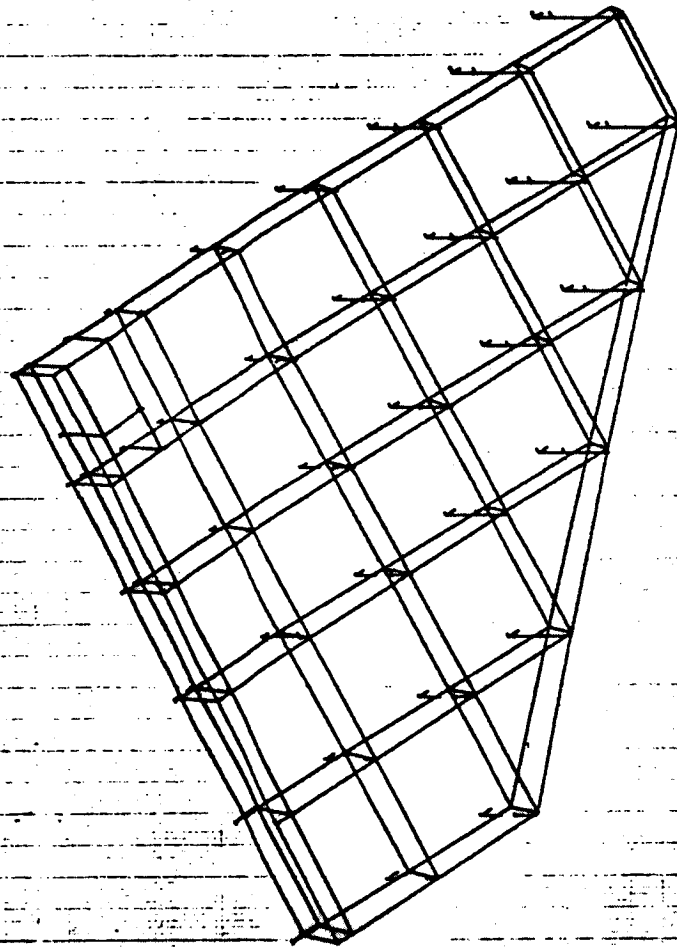
PHASE 3 (ORBITER NINE)  
4/10/74 (COVERS 80 PERCENT EFF.)  
ORBITER FREE FREE MODES  
MODAL DETOR. SUBCASE 8 MODE 8 FREQ. 48.93840

10/10/74 1001-007, 0.00000000



PHASE 9 (ORBITER WING)  
 1/10/74 (COVERS 85 PERCENT EFF.)  
 ORBITER FREE FREE MODES  
 MODAL DEFOR. SURFACE 9 MODE 9 FREQ. 91.99822

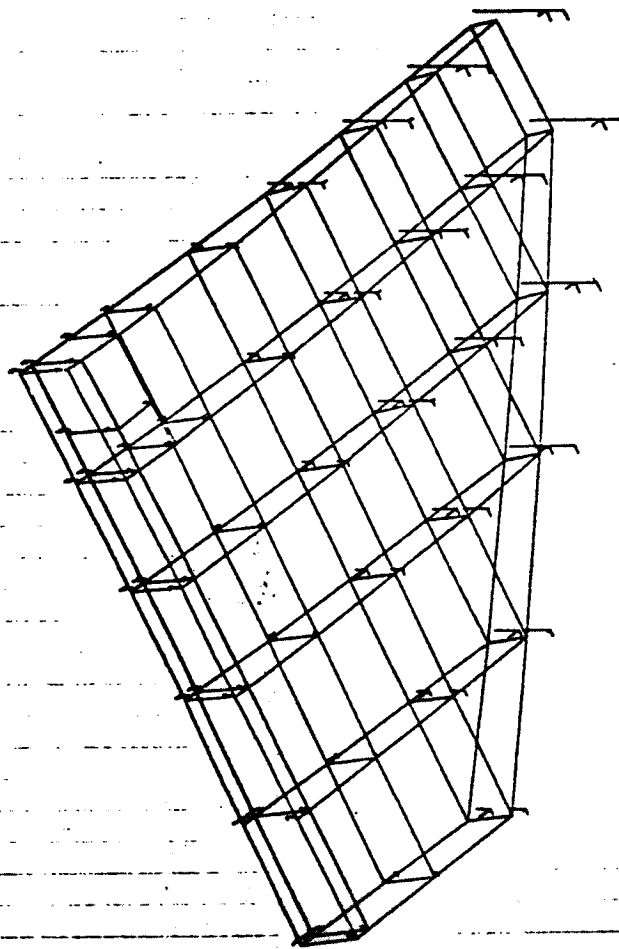
7 10/10/74 000-007, = 1.00147000



PHASE 9 CRIBTER WIND  
 7/10/74 COVERED BY PERCENT 577.1  
 CRIBTER FREE FREE MOSES  
 MODAL DEFORM. SUBCASE 7 MODE 7 FREQ. 54.48972

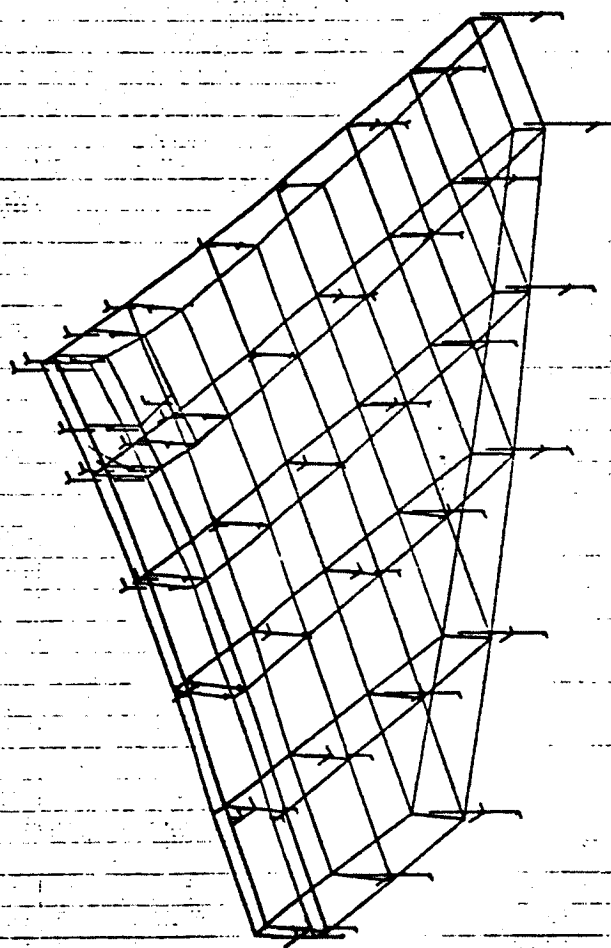


6 10/10/74 MAX-DEF. = 1.9749180



PHASE 3 (ORBITER WING)  
 4/10/74 (COVERS 88 PERCENT EFF.)  
 ORBITER FREE FREE MODES  
 MODAL DEFOR. SUBCASE 8 MODE 8 FREQ. 62.71884

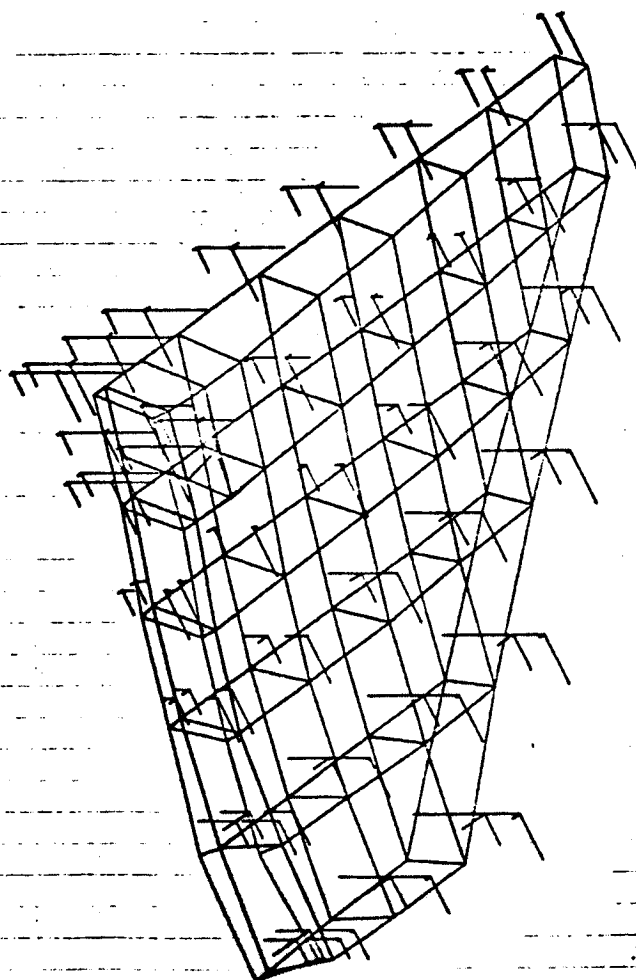
10/19/74 1400-007, 0 0.10555499



PHASE 3 CORRITER 21003  
 1/10/74 (COVERS 88 PERCENT 877.)  
 CORRITER FREE FREE MODES  
 MODAL DEFOR. SURFACE 1 MODE 1 FREQ. 88.88881

10

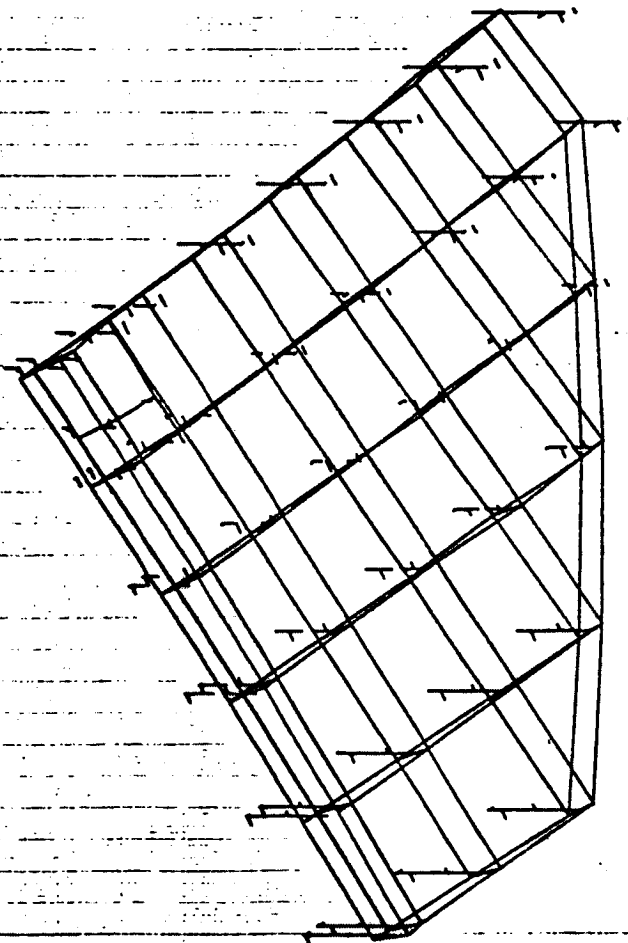
10 10/10/74 MAX-007. = 0.01440000



PHASE 3 (CRIBTER NING)  
N/10/74 (COVERS 88 PERCENT STY.)  
CRIBTER FREE FREE MOLES  
MOOL DEFOR. SUBCASE 10

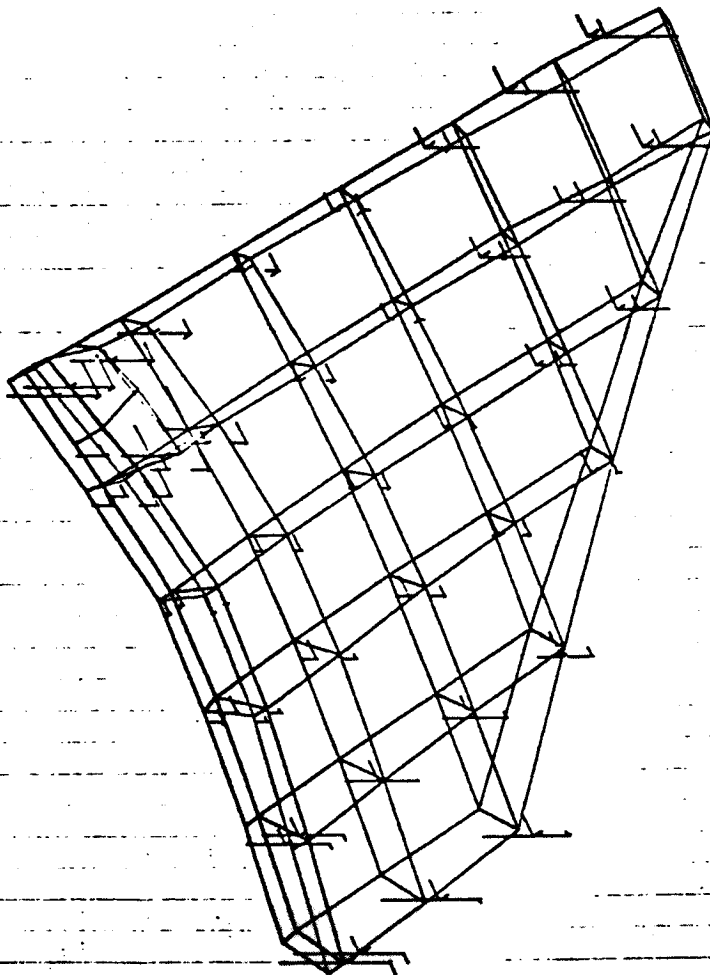
MODE 10 FREQ. 76.71848

11 10/18/74 1000-007. = 0.41011000



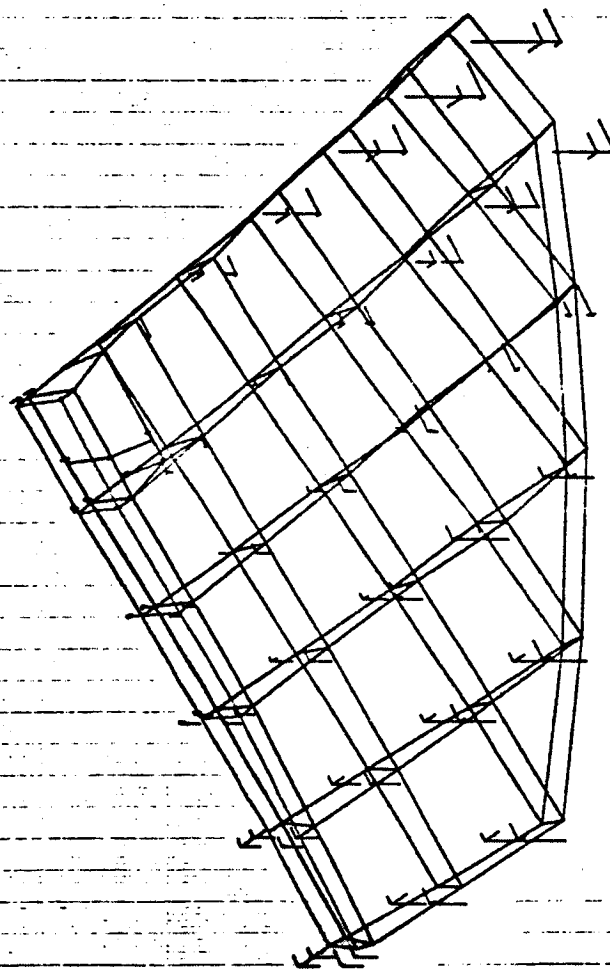
PHASE 3 CONSIDER NIMO  
9/10/74 (COVERS 88 PERCENT EFF.)  
CONSIDER FREE FREE MODES  
MODAL DETON. SUSCARE 11 MODE 11 FREQ. 99.11100

12 10/10/74 104-7041 0.0041041



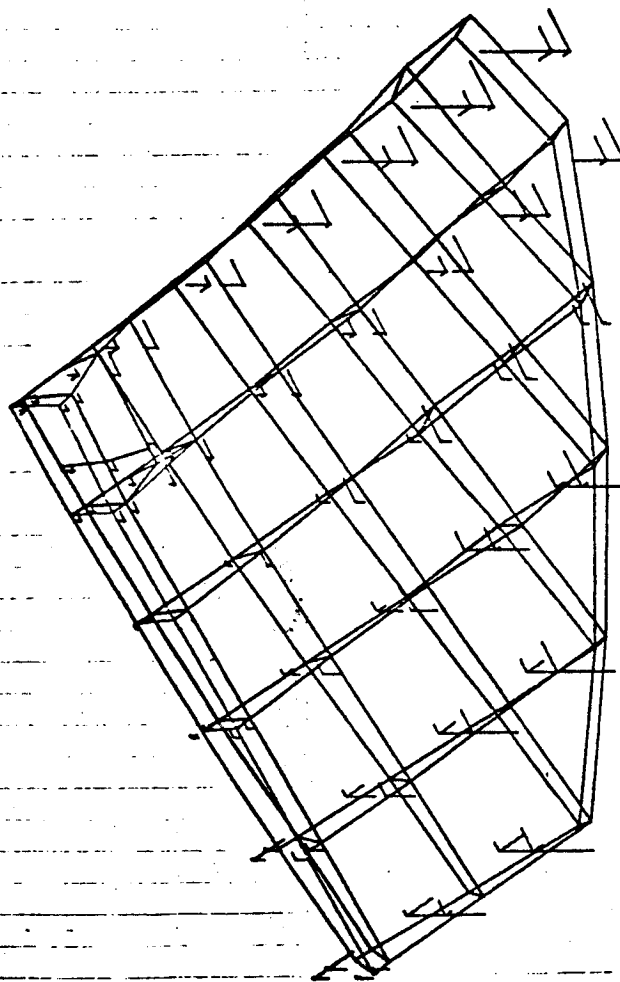
PHASE 3 COVER WING  
 10/10/74 COVER 08 PERCENT 077.1  
 COVER FREE FREE MODES  
 MODAL DEFOR. SUBCASE 12 MODE 12 FREQ. 104.7041

18 10/10/74 000-007. 0.14761120



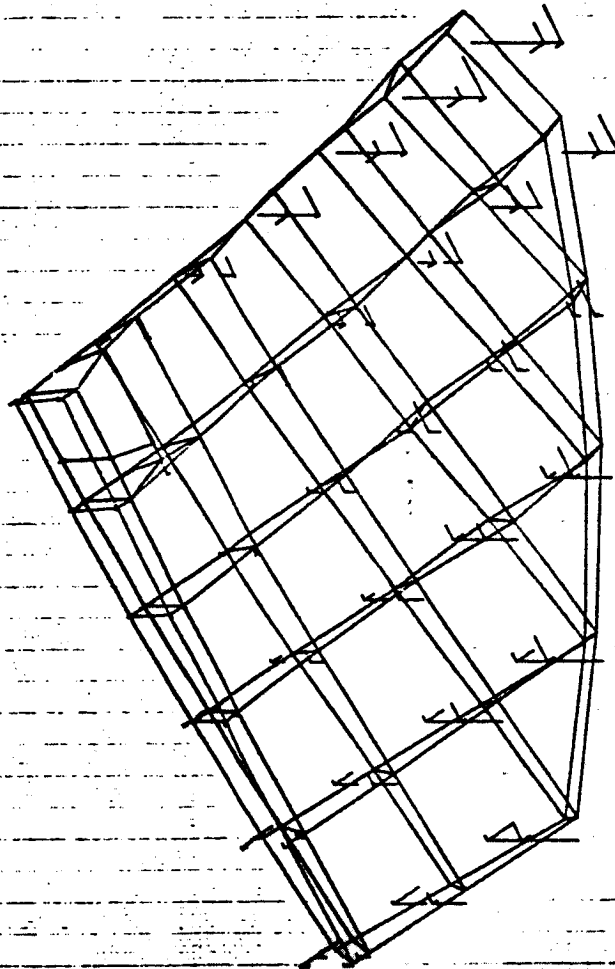
PHASE 3 CRIBITER NING  
V/10/74 (COVERS 88 PERCENT EPT.)  
CRIBITER FREE FREE MOSES  
MEDAL DEFOR. SUBCASE 13  
MODE 13 FREQ. 118.9276

14 10/18/74 MAX-DEF. = 1.17671760



PHASE 3 (ORBITER WIN9)  
 4/10/74 (COVERS 68 PERCENT STY.)  
 ORBITER FREE FREE MODES  
 MODAL DEFOR. SUBCASE 14 MODE 14 FREQ. 132.8084

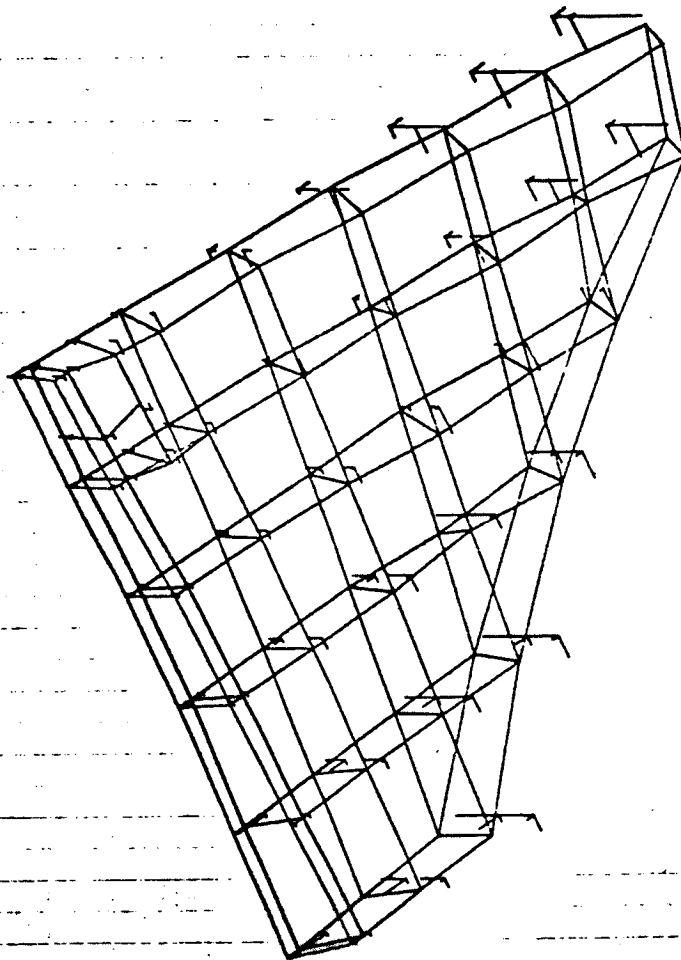
10 10/10/74 1001-007, 0.04710000



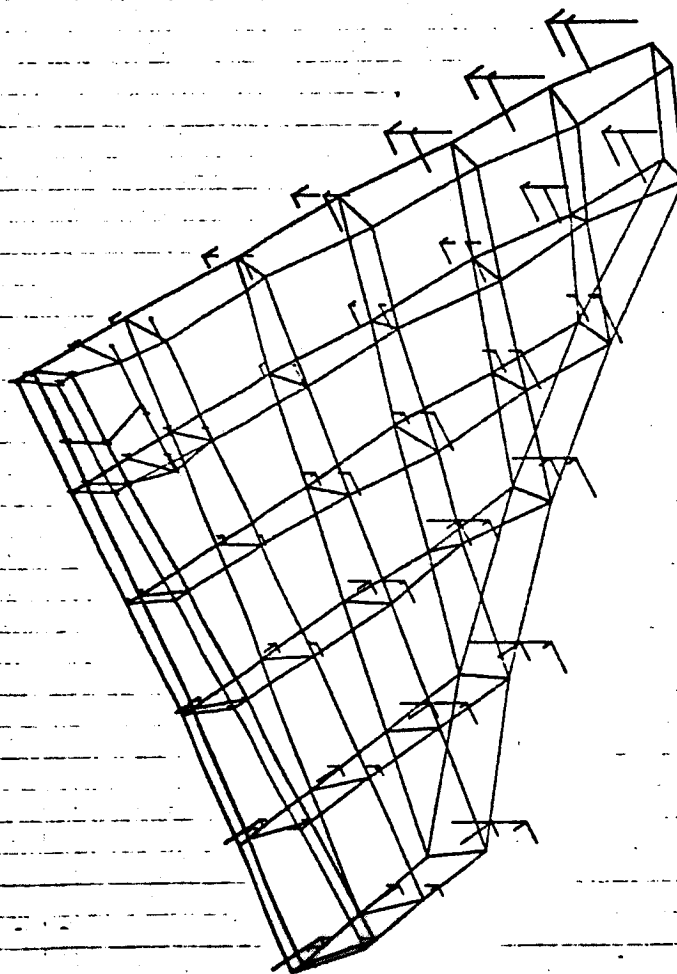
PHASE 3 CRIBTER WIND  
V/10/74 COVER 80 PERCENT 877,  
CRIBTER FREE FREE MOSES  
MODAL DCTOR, SUBCASE 18 MODE 18 PNO. 129,9431



10 10/10/74 MUM-007. • 0.04100742

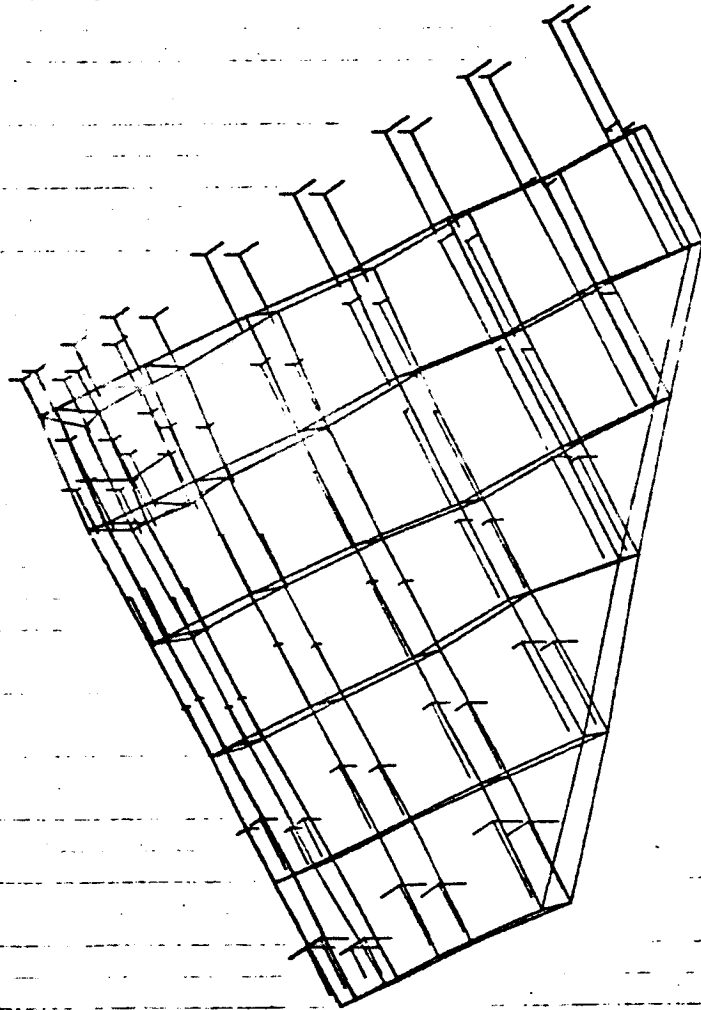


PHASE 2 (ORBITER WING)  
 4/10/74 (COVERS 80 PERCENT EFF.)  
 ORBITER FREE FREE MODES  
 MODAL ORDER, SUBCASE 18 MODE 18 FREQ. 130.2933

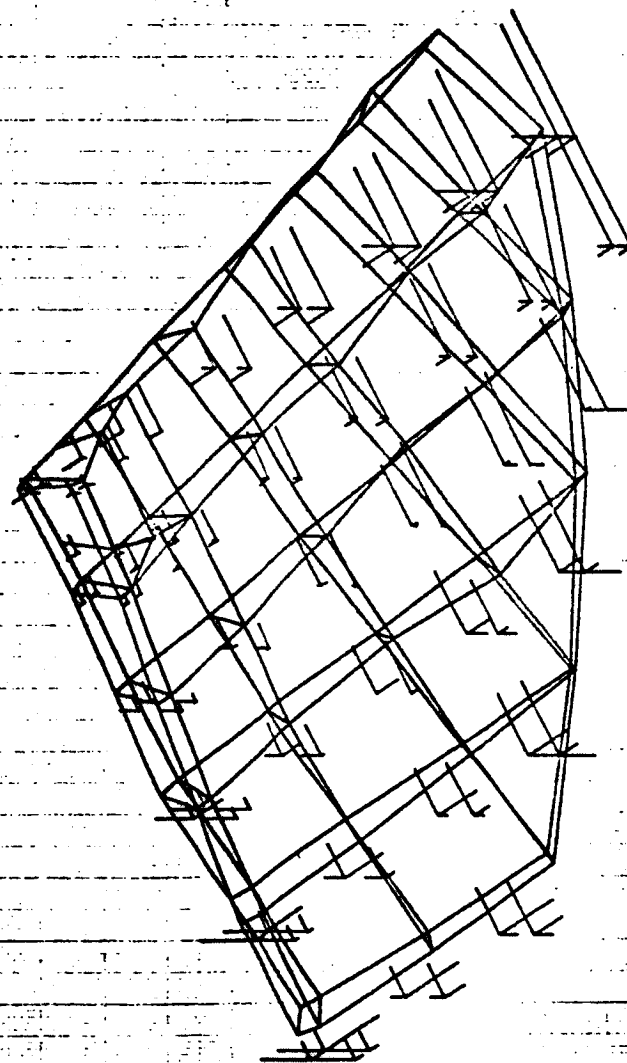


PHASE 9 ORBITER WING  
 4/10/74 (COVERS 88 PERCENT ETV.)  
 ORBITER FREE FREE MODES  
 MODAL DETOR. SUBCASE 17 MODE 17 FREQ. 142.1388

10 10/10/74 MAX-DEF. = 0.01870740

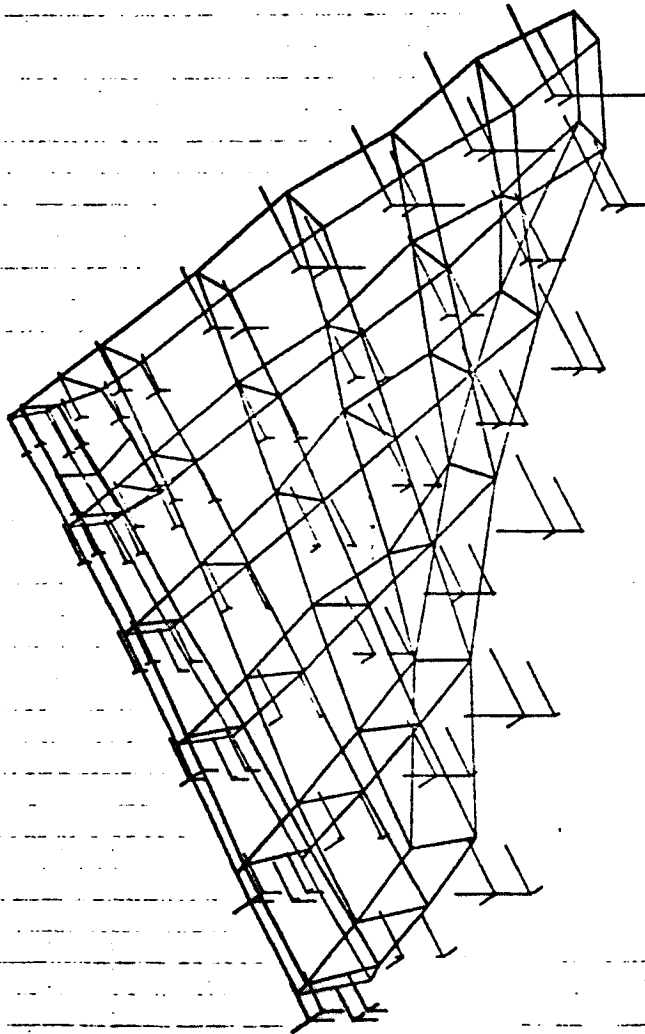


PHASE 3 (ORBITER WING)  
 7/10/74 (COVERS 88 PERCENT EFF.)  
 ORBITER FARE PACE WDCS  
 MODAL DEF/CR. SUBCASE 18 WDC 18 FREQ. 187.8334



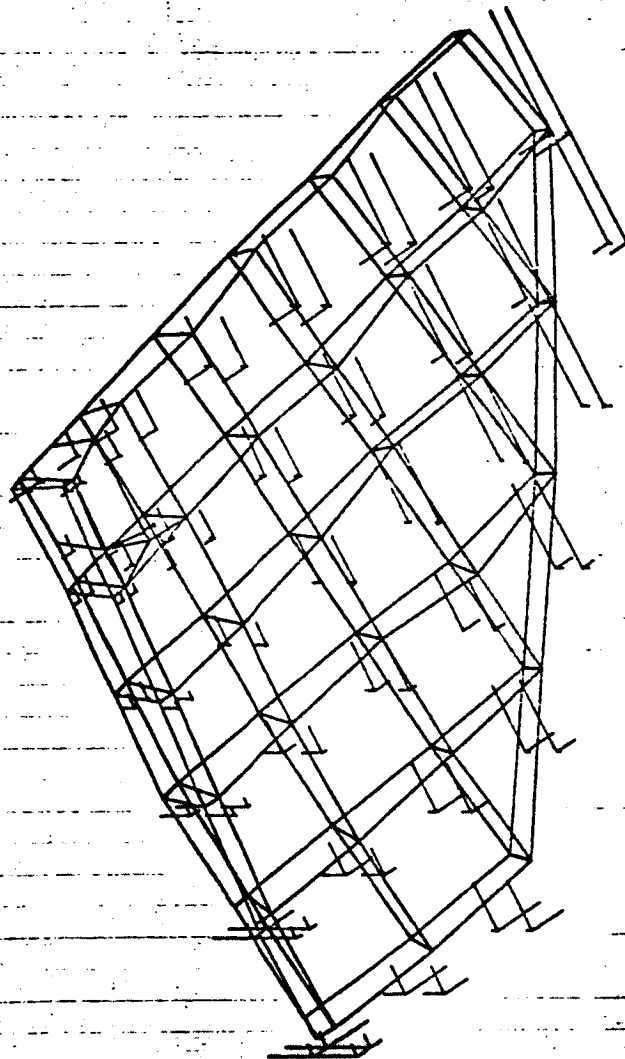
PHASE 3 CRIBTER VIEW  
 4/10/74 COWEN 00 PENDING EPT.  
 CRIBTER PRC "T" PRC 10000  
 MODAL DETON, SUSCARE 19 MODC 19 PRCB, 100.0000

20 10/10/74 0001-007. • 1.21049250



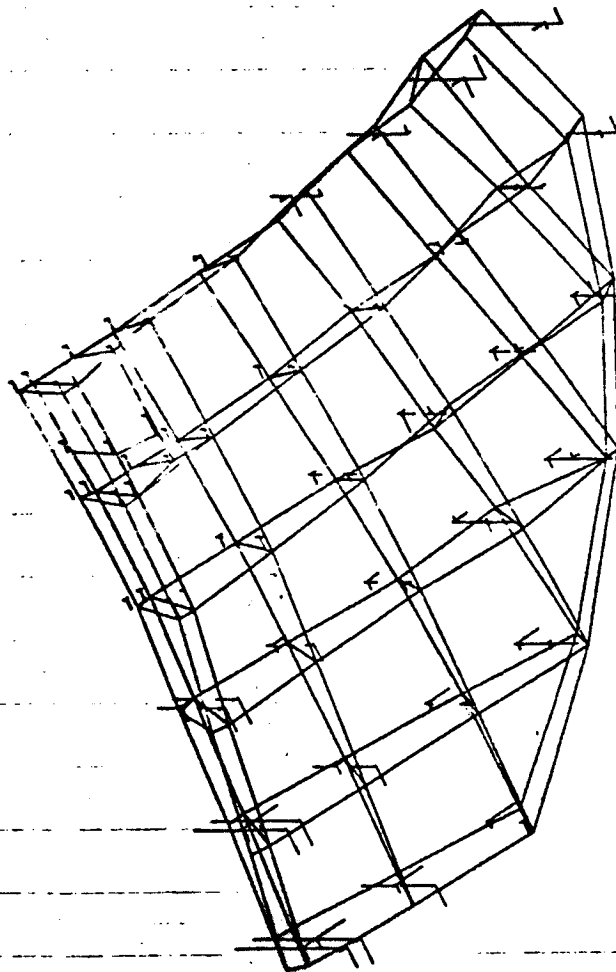
PHASE 3 ORBITER WING  
9/10/74 (COVERS 95 PERCENT EFF.)  
ORBITER FREE FREE MODES  
MODAL ORDER, SUBCASE 20 MODE 20 FREQ. 171.7384

21 10/18/74 W33-227, = 0.911%220

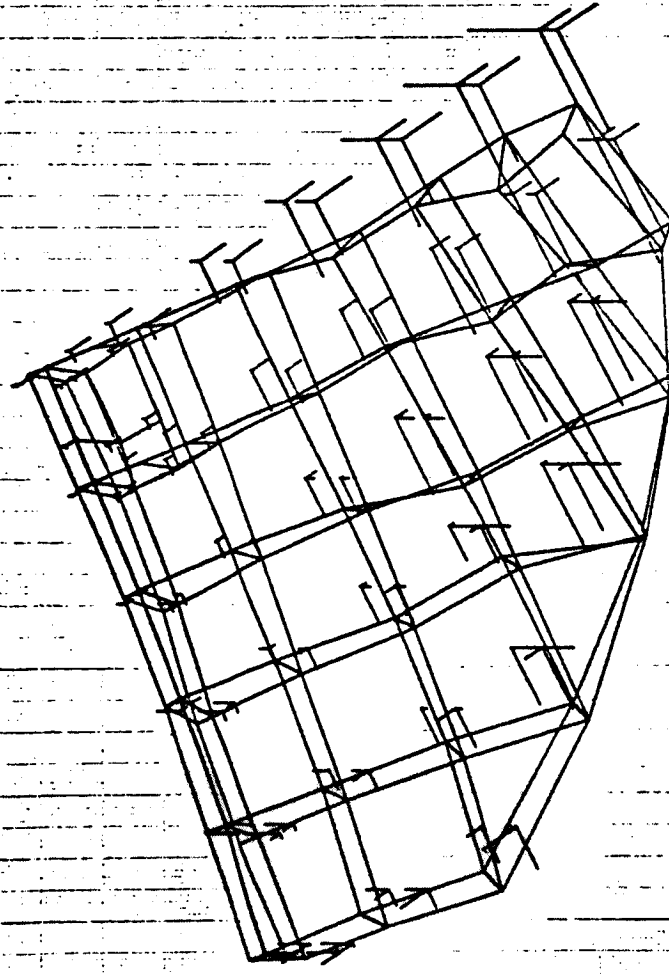


PHASE 9 CONSIDER WING)  
9/10/74 (COVERS 88 PERCENT EFF.)  
ORBITER FREE FREE MODES  
MODAL ORDER. SUBCASE 21 MODE 21 FREQ. 186.4870

22 10/10/74 MAX-REF. = 0.00817118



PHASE 9 (ORBITER WING)  
 1/10/74 (COVERS 85 PERCENT EFF.)  
 ORBITER FILE FREE 10 18  
 MODAL DEF. SURFACE 22 MADE 22 PREQ. 140.3383



PHASE 3 CONTAINER W/INER  
4/10/74 (COPING, REPAIRS) 20 PERS. 224.0544  
CONTAINER FREE PRICE BOOK  
MOY



**Appendix B16**  
**INPUT & PLOTS/PHASE 3 ANALYSIS: MODEL II CARGO**  
**DOORS SYMMETRIC FREE-FREE ORBITER MODES**

PHASE 3  
PRINTED DDIMS.SYM CASEXWITH STRAPSD

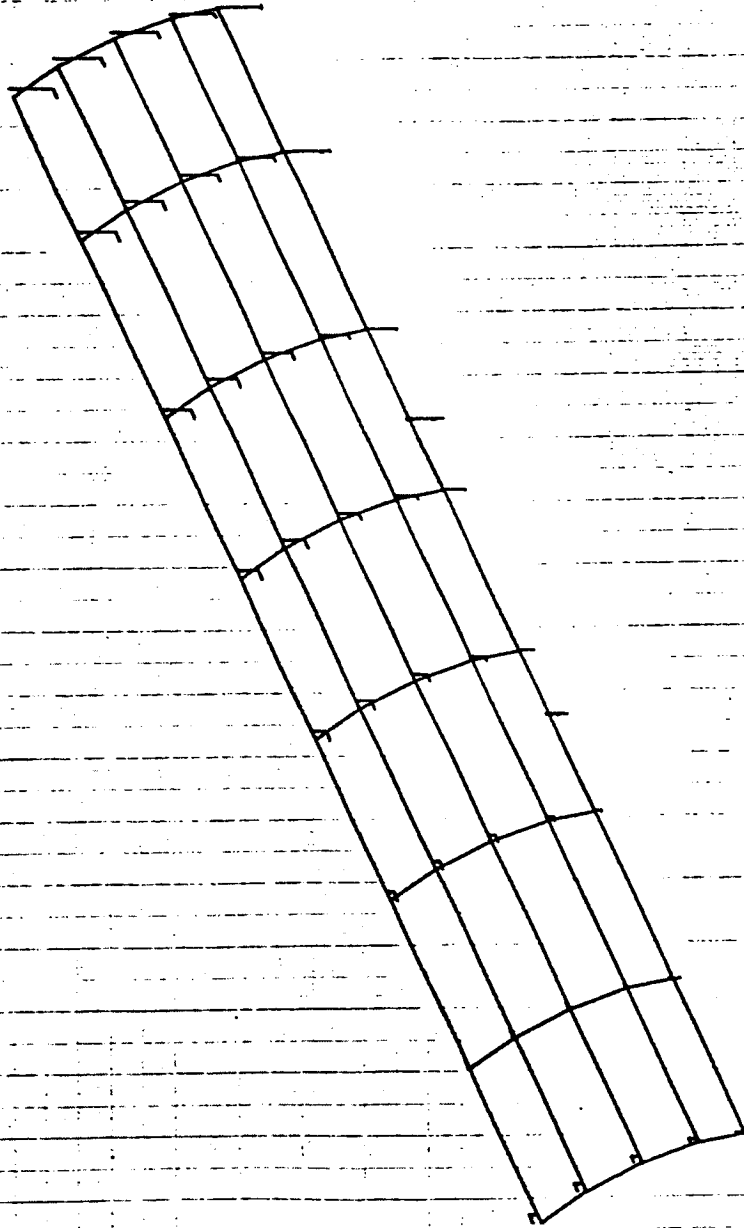
CASE CONTROL DECK ECHO

CARD  
COUNT

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22

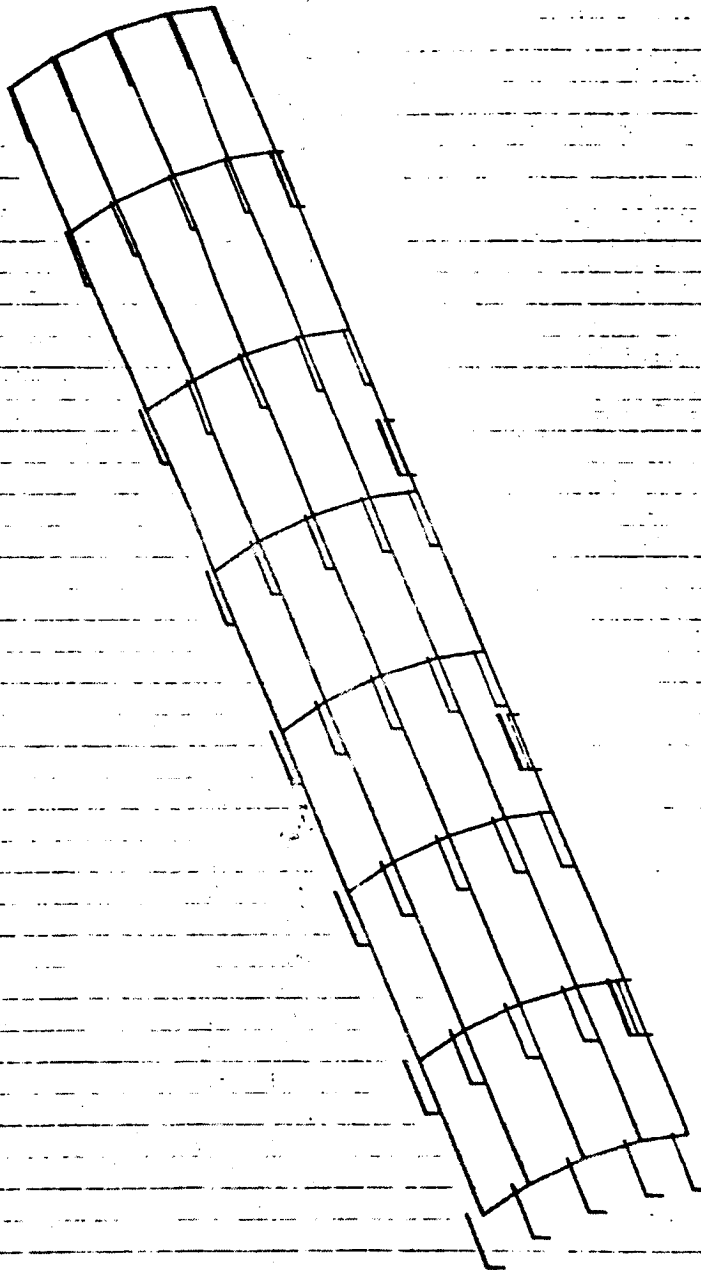
TITLE # PHASE 3  
SUBTITLE # CROITER DDIMS.SYM CASEXWITH STRAPSD  
MAXLINE# # 40000  
VICTOR # ALL  
SUBCASE 1  
LABEL # CROITER FREE FREE MODES  
MODES # 24  
OUTPUTS  
SET 1 # CROITER 4201 THRU 4232  
SET 2 # CROITER 4241 THRU 4272  
SET 3 # CROITER 4281 THRU 4312  
SET 4 # CROITER 4321 THRU 4352  
SET 5 # CROITER 4361 THRU 4392  
SET 6 # CROITER 4401 THRU 4432  
SET 7 # CROITER 4441 THRU 4472  
SET 8 # CROITER 4481 THRU 4512  
SET 9 # CROITER 4521 THRU 4552  
SET 10 # CROITER 4561 THRU 4592  
SET 11 # CROITER 4601 THRU 4632  
SET 12 # CROITER 4641 THRU 4672  
SET 13 # CROITER 4681 THRU 4712  
SET 14 # CROITER 4721 THRU 4752  
SET 15 # CROITER 4761 THRU 4792  
SET 16 # CROITER 4801 THRU 4832  
SET 17 # CROITER 4841 THRU 4872  
SET 18 # CROITER 4881 THRU 4912  
SET 19 # CROITER 4921 THRU 4952  
SET 20 # CROITER 4961 THRU 4992  
SET 21 # CROITER 5001 THRU 5032  
SET 22 # CROITER 5041 THRU 5072  
SET 23 # CROITER 5081 THRU 5112  
SET 24 # CROITER 5121 THRU 5152  
SET 25 # CROITER 5161 THRU 5192  
SET 26 # CROITER 5201 THRU 5232  
SET 27 # CROITER 5241 THRU 5272  
SET 28 # CROITER 5281 THRU 5312  
SET 29 # CROITER 5321 THRU 5352  
SET 30 # CROITER 5361 THRU 5392  
SET 31 # CROITER 5401 THRU 5432  
SET 32 # CROITER 5441 THRU 5472  
SET 33 # CROITER 5481 THRU 5512  
SET 34 # CROITER 5521 THRU 5552  
SET 35 # CROITER 5561 THRU 5592  
SET 36 # CROITER 5601 THRU 5632  
SET 37 # CROITER 5641 THRU 5672  
SET 38 # CROITER 5681 THRU 5712  
SET 39 # CROITER 5721 THRU 5752  
SET 40 # CROITER 5761 THRU 5792  
SET 41 # CROITER 5801 THRU 5832  
SET 42 # CROITER 5841 THRU 5872  
SET 43 # CROITER 5881 THRU 5912  
SET 44 # CROITER 5921 THRU 5952  
SET 45 # CROITER 5961 THRU 5992  
SET 46 # CROITER 6001 THRU 6032  
SET 47 # CROITER 6041 THRU 6072  
SET 48 # CROITER 6081 THRU 6112  
SET 49 # CROITER 6121 THRU 6152  
SET 50 # CROITER 6161 THRU 6192  
SET 51 # CROITER 6201 THRU 6232  
SET 52 # CROITER 6241 THRU 6272  
SET 53 # CROITER 6281 THRU 6312  
SET 54 # CROITER 6321 THRU 6352  
SET 55 # CROITER 6361 THRU 6392  
SET 56 # CROITER 6401 THRU 6432  
SET 57 # CROITER 6441 THRU 6472  
SET 58 # CROITER 6481 THRU 6512  
SET 59 # CROITER 6521 THRU 6552  
SET 60 # CROITER 6561 THRU 6592  
SET 61 # CROITER 6601 THRU 6632  
SET 62 # CROITER 6641 THRU 6672  
SET 63 # CROITER 6681 THRU 6712  
SET 64 # CROITER 6721 THRU 6752  
SET 65 # CROITER 6761 THRU 6792  
SET 66 # CROITER 6801 THRU 6832  
SET 67 # CROITER 6841 THRU 6872  
SET 68 # CROITER 6881 THRU 6912  
SET 69 # CROITER 6921 THRU 6952  
SET 70 # CROITER 6961 THRU 6992  
SET 71 # CROITER 7001 THRU 7032  
SET 72 # CROITER 7041 THRU 7072  
SET 73 # CROITER 7081 THRU 7112  
SET 74 # CROITER 7121 THRU 7152  
SET 75 # CROITER 7161 THRU 7192  
SET 76 # CROITER 7201 THRU 7232  
SET 77 # CROITER 7241 THRU 7272  
SET 78 # CROITER 7281 THRU 7312  
SET 79 # CROITER 7321 THRU 7352  
SET 80 # CROITER 7361 THRU 7392  
SET 81 # CROITER 7401 THRU 7432  
SET 82 # CROITER 7441 THRU 7472  
SET 83 # CROITER 7481 THRU 7512  
SET 84 # CROITER 7521 THRU 7552  
SET 85 # CROITER 7561 THRU 7592  
SET 86 # CROITER 7601 THRU 7632  
SET 87 # CROITER 7641 THRU 7672  
SET 88 # CROITER 7681 THRU 7712  
SET 89 # CROITER 7721 THRU 7752  
SET 90 # CROITER 7761 THRU 7792  
SET 91 # CROITER 7801 THRU 7832  
SET 92 # CROITER 7841 THRU 7872  
SET 93 # CROITER 7881 THRU 7912  
SET 94 # CROITER 7921 THRU 7952  
SET 95 # CROITER 7961 THRU 7992  
SET 96 # CROITER 8001 THRU 8032  
SET 97 # CROITER 8041 THRU 8072  
SET 98 # CROITER 8081 THRU 8112  
SET 99 # CROITER 8121 THRU 8152  
SET 100 # CROITER 8161 THRU 8192  
SET 101 # CROITER 8201 THRU 8232  
SET 102 # CROITER 8241 THRU 8272  
SET 103 # CROITER 8281 THRU 8312  
SET 104 # CROITER 8321 THRU 8352  
SET 105 # CROITER 8361 THRU 8392  
SET 106 # CROITER 8401 THRU 8432  
SET 107 # CROITER 8441 THRU 8472  
SET 108 # CROITER 8481 THRU 8512  
SET 109 # CROITER 8521 THRU 8552  
SET 110 # CROITER 8561 THRU 8592  
SET 111 # CROITER 8601 THRU 8632  
SET 112 # CROITER 8641 THRU 8672  
SET 113 # CROITER 8681 THRU 8712  
SET 114 # CROITER 8721 THRU 8752  
SET 115 # CROITER 8761 THRU 8792  
SET 116 # CROITER 8801 THRU 8832  
SET 117 # CROITER 8841 THRU 8872  
SET 118 # CROITER 8881 THRU 8912  
SET 119 # CROITER 8921 THRU 8952  
SET 120 # CROITER 8961 THRU 8992  
SET 121 # CROITER 9001 THRU 9032  
SET 122 # CROITER 9041 THRU 9072  
SET 123 # CROITER 9081 THRU 9112  
SET 124 # CROITER 9121 THRU 9152  
SET 125 # CROITER 9161 THRU 9192  
SET 126 # CROITER 9201 THRU 9232  
SET 127 # CROITER 9241 THRU 9272  
SET 128 # CROITER 9281 THRU 9312  
SET 129 # CROITER 9321 THRU 9352  
SET 130 # CROITER 9361 THRU 9392  
SET 131 # CROITER 9401 THRU 9432  
SET 132 # CROITER 9441 THRU 9472  
SET 133 # CROITER 9481 THRU 9512  
SET 134 # CROITER 9521 THRU 9552  
SET 135 # CROITER 9561 THRU 9592  
SET 136 # CROITER 9601 THRU 9632  
SET 137 # CROITER 9641 THRU 9672  
SET 138 # CROITER 9681 THRU 9712  
SET 139 # CROITER 9721 THRU 9752  
SET 140 # CROITER 9761 THRU 9792  
SET 141 # CROITER 9801 THRU 9832  
SET 142 # CROITER 9841 THRU 9872  
SET 143 # CROITER 9881 THRU 9912  
SET 144 # CROITER 9921 THRU 9952  
SET 145 # CROITER 9961 THRU 9992  
SET 146 # CROITER 10001 THRU 10032  
SET 147 # CROITER 10041 THRU 10072  
SET 148 # CROITER 10081 THRU 10112  
SET 149 # CROITER 10121 THRU 10152  
SET 150 # CROITER 10161 THRU 10192  
SET 151 # CROITER 10201 THRU 10232  
SET 152 # CROITER 10241 THRU 10272  
SET 153 # CROITER 10281 THRU 10312  
SET 154 # CROITER 10321 THRU 10352  
SET 155 # CROITER 10361 THRU 10392  
SET 156 # CROITER 10401 THRU 10432  
SET 157 # CROITER 10441 THRU 10472  
SET 158 # CROITER 10481 THRU 10512  
SET 159 # CROITER 10521 THRU 10552  
SET 160 # CROITER 10561 THRU 10592  
SET 161 # CROITER 10601 THRU 10632  
SET 162 # CROITER 10641 THRU 10672  
SET 163 # CROITER 10681 THRU 10712  
SET 164 # CROITER 10721 THRU 10752  
SET 165 # CROITER 10761 THRU 10792  
SET 166 # CROITER 10801 THRU 10832  
SET 167 # CROITER 10841 THRU 10872  
SET 168 # CROITER 10881 THRU 10912  
SET 169 # CROITER 10921 THRU 10952  
SET 170 # CROITER 10961 THRU 10992  
SET 171 # CROITER 11001 THRU 11032  
SET 172 # CROITER 11041 THRU 11072  
SET 173 # CROITER 11081 THRU 11112  
SET 174 # CROITER 11121 THRU 11152  
SET 175 # CROITER 11161 THRU 11192  
SET 176 # CROITER 11201 THRU 11232  
SET 177 # CROITER 11241 THRU 11272  
SET 178 # CROITER 11281 THRU 11312  
SET 179 # CROITER 11321 THRU 11352  
SET 180 # CROITER 11361 THRU 11392  
SET 181 # CROITER 11401 THRU 11432  
SET 182 # CROITER 11441 THRU 11472  
SET 183 # CROITER 11481 THRU 11512  
SET 184 # CROITER 11521 THRU 11552  
SET 185 # CROITER 11561 THRU 11592  
SET 186 # CROITER 11601 THRU 11632  
SET 187 # CROITER 11641 THRU 11672  
SET 188 # CROITER 11681 THRU 11712  
SET 189 # CROITER 11721 THRU 11752  
SET 190 # CROITER 11761 THRU 11792  
SET 191 # CROITER 11801 THRU 11832  
SET 192 # CROITER 11841 THRU 11872  
SET 193 # CROITER 11881 THRU 11912  
SET 194 # CROITER 11921 THRU 11952  
SET 195 # CROITER 11961 THRU 11992  
SET 196 # CROITER 12001 THRU 12032  
SET 197 # CROITER 12041 THRU 12072  
SET 198 # CROITER 12081 THRU 12112  
SET 199 # CROITER 12121 THRU 12152  
SET 200 # CROITER 12161 THRU 12192  
SET 201 # CROITER 12201 THRU 12232  
SET 202 # CROITER 12241 THRU 12272  
SET 203 # CROITER 12281 THRU 12312  
SET 204 # CROITER 12321 THRU 12352  
SET 205 # CROITER 12361 THRU 12392  
SET 206 # CROITER 12401 THRU 12432  
SET 207 # CROITER 12441 THRU 12472  
SET 208 # CROITER 12481 THRU 12512  
SET 209 # CROITER 12521 THRU 12552  
SET 210 # CROITER 12561 THRU 12592  
SET 211 # CROITER 12601 THRU 12632  
SET 212 # CROITER 12641 THRU 12672  
SET 213 # CROITER 12681 THRU 12712  
SET 214 # CROITER 12721 THRU 12752  
SET 215 # CROITER 12761 THRU 12792  
SET 216 # CROITER 12801 THRU 12832  
SET 217 # CROITER 12841 THRU 12872  
SET 218 # CROITER 12881 THRU 12912  
SET 219 # CROITER 12921 THRU 12952  
SET 220 # CROITER 12961 THRU 12992  
SET 221 # CROITER 13001 THRU 13032  
SET 222 # CROITER 13041 THRU 13072  
SET 223 # CROITER 13081 THRU 13112  
SET 224 # CROITER 13121 THRU 13152  
SET 225 # CROITER 13161 THRU 13192  
SET 226 # CROITER 13201 THRU 13232  
SET 227 # CROITER 13241 THRU 13272  
SET 228 # CROITER 13281 THRU 13312  
SET 229 # CROITER 13321 THRU 13352  
SET 230 # CROITER 13361 THRU 13392  
SET 231 # CROITER 13401 THRU 13432  
SET 232 # CROITER 13441 THRU 13472  
SET 233 # CROITER 13481 THRU 13512  
SET 234 # CROITER 13521 THRU 13552  
SET 235 # CROITER 13561 THRU 13592  
SET 236 # CROITER 13601 THRU 13632  
SET 237 # CROITER 13641 THRU 13672  
SET 238 # CROITER 13681 THRU 13712  
SET 239 # CROITER 13721 THRU 13752  
SET 240 # CROITER 13761 THRU 13792  
SET 241 # CROITER 13801 THRU 13832  
SET 242 # CROITER 13841 THRU 13872  
SET 243 # CROITER 13881 THRU 13912  
SET 244 # CROITER 13921 THRU 13952  
SET 245 # CROITER 13961 THRU 13992  
SET 246 # CROITER 14001 THRU 14032  
SET 247 # CROITER 14041 THRU 14072  
SET 248 # CROITER 14081 THRU 14112  
SET 249 # CROITER 14121 THRU 14152  
SET 250 # CROITER 14161 THRU 14192  
SET 251 # CROITER 14201 THRU 14232  
SET 252 # CROITER 14241 THRU 14272  
SET 253 # CROITER 14281 THRU 14312  
SET 254 # CROITER 14321 THRU 14352  
SET 255 # CROITER 14361 THRU 14392  
SET 256 # CROITER 14401 THRU 14432  
SET 257 # CROITER 14441 THRU 14472  
SET 258 # CROITER 14481 THRU 14512  
SET 259 # CROITER 14521 THRU 14552  
SET 260 # CROITER 14561 THRU 14592  
SET 261 # CROITER 14601 THRU 14632  
SET 262 # CROITER 14641 THRU 14672  
SET 263 # CROITER 14681 THRU 14712  
SET 264 # CROITER 14721 THRU 14752  
SET 265 # CROITER 14761 THRU 14792  
SET 266 # CROITER 14801 THRU 14832  
SET 267 # CROITER 14841 THRU 14872  
SET 268 # CROITER 14881 THRU 14912  
SET 269 # CROITER 14921 THRU 14952  
SET 270 # CROITER 14961 THRU 14992  
SET 271 # CROITER 15001 THRU 15032  
SET 272 # CROITER 15041 THRU 15072  
SET 273 # CROITER 15081 THRU 15112  
SET 274 # CROITER 15121 THRU 15152  
SET 275 # CROITER 15161 THRU 15192  
SET 276 # CROITER 15201 THRU 15232  
SET 277 # CROITER 15241 THRU 15272  
SET 278 # CROITER 15281 THRU 15312  
SET 279 # CROITER 15321 THRU 15352  
SET 280 # CROITER 15361 THRU 15392  
SET 281 # CROITER 15401 THRU 15432  
SET 282 # CROITER 15441 THRU 15472  
SET 283 # CROITER 15481 THRU 15512  
SET 284 # CROITER 15521 THRU 15552  
SET 285 # CROITER 15561 THRU 15592  
SET 286 # CROITER 15601 THRU 15632  
SET 287 # CROITER 15641 THRU 15672  
SET 288 # CROITER 15681 THRU 15712  
SET 289 # CROITER 15721 THRU 15752  
SET 290 # CROITER 15761 THRU 15792  
SET 291 # CROITER 15801 THRU 15832  
SET 292 # CROITER 15841 THRU 15872  
SET 293 # CROITER 15881 THRU 15912  
SET 294 # CROITER 15921 THRU 15952  
SET 295 # CROITER 15961 THRU 15992  
SET 296 # CROITER 16001 THRU 16032  
SET 297 # CROITER 16041 THRU 16072  
SET 298 # CROITER 16081 THRU 16112  
SET 299 # CROITER 16121 THRU 16152  
SET 300 # CROITER 16161 THRU 16192  
SET 301 # CROITER 16201 THRU 16232  
SET 302 # CROITER 16241 THRU 16272  
SET 303 # CROITER 16281 THRU 16312  
SET 304 # CROITER 16321 THRU 16352  
SET 305 # CROITER 16361 THRU 16392  
SET 306 # CROITER 16401 THRU 16432  
SET 307 # CROITER 16441 THRU 16472  
SET 308 # CROITER 16481 THRU 16512  
SET 309 # CROITER 16521 THRU 16552  
SET 310 # CROITER 16561 THRU 16592  
SET 311 # CROITER 16601 THRU 16632  
SET 312 # CROITER 16641 THRU 16672  
SET 313 # CROITER 16681 THRU 16712  
SET 314 # CROITER 16721 THRU 16752  
SET 315 # CROITER 16761 THRU 16792  
SET 316 # CROITER 16801 THRU 16832  
SET 317 # CROITER 16841 THRU 16872  
SET 318 # CROITER 16881 THRU 16912  
SET 319 # CROITER 16921 THRU 16952  
SET 320 # CROITER 16961 THRU 16992  
SET 321 # CROITER 17001 THRU 17032  
SET 322 # CROITER 17041 THRU 17072  
SET 323 # CROITER 17081 THRU 17112  
SET 324 # CROITER 17121 THRU 17152  
SET 325 # CROITER 17161 THRU 17192  
SET 326 # CROITER 17201 THRU 17232  
SET 327 # CROITER 17241 THRU 17272  
SET 328 # CROITER 17281 THRU 17312  
SET 329 # CROITER 17321 THRU 17352  
SET 330 # CROITER 17361 THRU 17392  
SET 331 # CROITER 17401 THRU 17432  
SET 332 # CROITER 17441 THRU 17472  
SET 333 # CROITER 17481 THRU 17512  
SET 334 # CROITER 17521 THRU 17552  
SET 335 # CROITER 17561 THRU 17592  
SET 336 # CROITER 17601 THRU 17632  
SET 337 # CROITER 17641 THRU 17672  
SET 338 # CROITER 17681 THRU 17712  
SET 339 # CROITER 17721 THRU 17752  
SET 340 # CROITER 17761 THRU 17792  
SET 341 # CROITER 17801 THRU 17832  
SET 342 # CROITER 17841 THRU 17872  
SET 343 # CROITER 17881 THRU 17912  
SET 344 # CROITER 17921 THRU 17952  
SET 345 # CROITER 17961 THRU 17992  
SET 346 # CROITER 18001 THRU 18032  
SET 347 # CROITER 18041 THRU 18072  
SET 348 # CROITER 18081 THRU 18112  
SET 349 # CROITER 18121 THRU 18152  
SET 350 # CROITER 18161 THRU 18192  
SET 351 # CROITER 18201 THRU 18232  
SET 352 # CROITER 18241 THRU 18272  
SET 353 # CROITER 18281 THRU 18312  
SET 354 # CROITER 18321 THRU 18352  
SET 355 # CROITER 18361 THRU 18392  
SET 356 # CROITER 18401 THRU 18432  
SET 357 # CROITER 18441 THRU 18472  
SET 358 # CROITER 18481 THRU 18512  
SET 359 # CROITER 18521 THRU 18552  
SET 360 # CROITER 18561 THRU 18592  
SET 361 # CROITER 18601 THRU 18632  
SET 362 # CROITER 18641 THRU 18672  
SET 363 # CROITER 18681 THRU 18712  
SET 364 # CROITER 18721 THRU 18752  
SET 365 # CROITER 18761 THRU 18792  
SET 366 # CROITER 18801 THRU 18832  
SET 367 # CROITER 18841 THRU 18872  
SET 368 # CROITER 18881 THRU 18912  
SET 369 # CROITER 18921 THRU 18952  
SET 370 # CROITER 18961 THRU 18992  
SET 371 # CROITER 19001 THRU 19032  
SET 372 # CROITER 19041 THRU 19072  
SET 373 # CROITER 19081 THRU 19112  
SET 374 # CROITER 19121 THRU 19152  
SET 375 # CROITER 19161 THRU 19192  
SET 376 # CROITER 19201 THRU 19232  
SET 377 # CROITER 19241 THRU 19272  
SET 378 # CROITER 19281 THRU 19312  
SET 379 # CROITER 19321 THRU 19352  
SET 380 # CROITER 19361 THRU 19392  
SET 381 # CROITER 19401 THRU 19432  
SET 382 # CROITER 19441 THRU 19472  
SET 383 # CROITER 19481 THRU 19512  
SET 384 # CROITER 19521 THRU 19552  
SET 385 # CROITER 19561 THRU 19592  
SET 386 # CROITER 19601 THRU 19632  
SET 387 # CROITER 19641 THRU 19672  
SET 388 # CROITER 19681 THRU 19712  
SET 389 # CROITER 19721 THRU 19752  
SET 390 # CROITER 19761 THRU 19792  
SET 391 # CROITER 19801 THRU 19832  
SET 392 # CROITER 19841 THRU 19872  
SET 393 # CROITER 19881 THRU 19912  
SET 394 # CROITER 19921 THRU 19952  
SET 395 # CROITER 19961 THRU 19992  
SET 396 # CROITER 20001 THRU 20032  
SET 397 # CROITER 20041 THRU 20072  
SET 398 # CROITER 20081 THRU 20112  
SET 399 # CROITER 20121 THRU 20152  
SET 400 # CROITER 20161 THRU 20192  
SET 401 # CROITER 20201 THRU 20232  
SET 402 # CROITER 20241 THRU 20272  
SET 403 # CROITER 20281 THRU 20312  
SET 404 # CROITER 20321 THRU 20352  
SET 405 # CROITER 20361 THRU 20392  
SET 406 # CROITER 20401 THRU 20432  
SET 407 # CROITER 20441 THRU 20472  
SET 408 # CROITER 20481 THRU 20512  
SET 409 # CROITER 20521 THRU 20552  
SET 410 # CROITER 20561 THRU 20592  
SET 411 # CROITER 20601 THRU 20632  
SET 412 # CROITER 20641 THRU 20672  
SET 413 # CROITER 20681 THRU 20712  
SET 414 # CROITER 20721 THRU 20752  
SET 415 # CROITER 20761 THRU 20792  
SET 416 # CROITER 20801 THRU 20832  
SET 417 # CROITER 20841 THRU 20872  
SET 418 # CROITER 20881 THRU 20912  
SET 419 # CROITER 20921 THRU 20952  
SET 420 # CROITER 20961 THRU 20992  
SET 421 # CROITER 21001 THRU 21032  
SET 422 # CROITER 21041 THRU 21072  
SET 423 # CROITER 21081 THRU 21112  
SET 424 # CROITER 21121 THRU 21152  
SET 425 # CROITER 21161 THRU 21192  
SET 426 # CROITER 21201 THRU 21232  
SET 427 # CROITER 21241 THRU 21272  
SET 428 # CROITER 21281 THRU 21312  
SET 429 # CROITER 21321 THRU 21352  
SET 430 # CROITER 21361 THRU 21392  
SET 431 # CROITER 21401 THRU 21432  
SET 432 # CROITER 21441 THRU 21472  
SET 433 # CROITER 21481 THRU 21512  
SET 434 # CROITER 21521 THRU 21552  
SET 435 # CROITER 21561 THRU 21592  
SET 436 # CROITER 21601 THRU 21632  
SET 437 # CROITER 21641 THRU 21672  
SET 438 # CROITER 21681 THRU 21712  
SET 439 # CROITER 21721 THRU 21752  
SET 440 # CROITER 21761 THRU 21792  
SET 441 # CROITER 21801 THRU 21832  
SET 442 # CROITER 21841 THRU 21872  
SET 443 # CROITER 21881 THRU 21912  
SET 444 # CROITER 21921 THRU 21952  
SET 445 # CROITER 21961 THRU 21992  
SET 446 # CROITER 22001 THRU 22032  
SET 447 # CROITER 22041 THRU 22072  
SET 448 # CROITER 22081 THRU 22112  
SET 449 # CROITER 22121 THRU 22152  
SET 450 # CROITER 22161 THRU 22192  
SET 451 # CROITER 22201 THRU 22232  
SET 452 # CROITER 22241 THRU 22272  
SET 453 # CROITER 22281 THRU 22312  
SET 454 # CROITER 22321 THRU 22352  
SET 455 # CROITER 22361 THRU 22392  
SET 456 # CROITER 22401 THRU 22432  
SET 457 # CROITER 22441 THRU 22472  
SET 458 # CROITER 22481 THRU 22512  
SET 459 # CROITER 22521 THRU 22552  
SET 460 # CROITER 22561 THRU 22592  
SET 461 # CROITER 22601 THRU 22632  
SET 462 # CROITER 22641 THRU 22672  
SET 463 # CROITER 22681 THRU 22712  
SET 464 # CROITER 22721 THRU 22752  
SET 465 # CROITER 22761 THRU 22792  
SET 466 # CROITER 22801 THRU 22832  
SET 467 # CROITER 22841 THRU 22872  
SET 468 # CROITER 22881 THRU 22912  
SET 469 # CROITER 22921 THRU 22952  
SET 470 # CROITER 22961 THRU 22992  
SET 471 # CROITER 23001 THRU 23032  
SET 472 # CROITER 23041 THRU 23072  
SET 473 # CROITER 23081 THRU 23112  
SET 474 # CROITER 23121 THRU 23152  
SET 475 # CROITER 23161 THRU 23192  
SET 476 # CROITER 23201 THRU 23232  
SET 477 # CROITER 23241 THRU 23272  
SET 478 # CROITER 23281 THRU 23312  
SET 479 # CROITER 23321 THRU 23352  
SET 480 # CROITER 23361 THRU 23392  
SET 481 # CROITER 23401 THRU 23432  
SET 482 # CROITER 23441 THRU 23472  
SET 483 # CROITER 23481 THRU 23512  
SET 484 # CROITER 23521 THRU 23552  
SET 485 # CROITER 23561 THRU 23592  
SET 486 # CROITER 23601 THRU 23632  
SET 487 # CROITER 23641 THRU 23672  
SET 488 # CROITER 23681 THRU 23712  
SET 489 # CROITER 23721 THRU 23752  
SET 490 # CROITER 237

10/10/74 1000-0007, 0 0.0445100



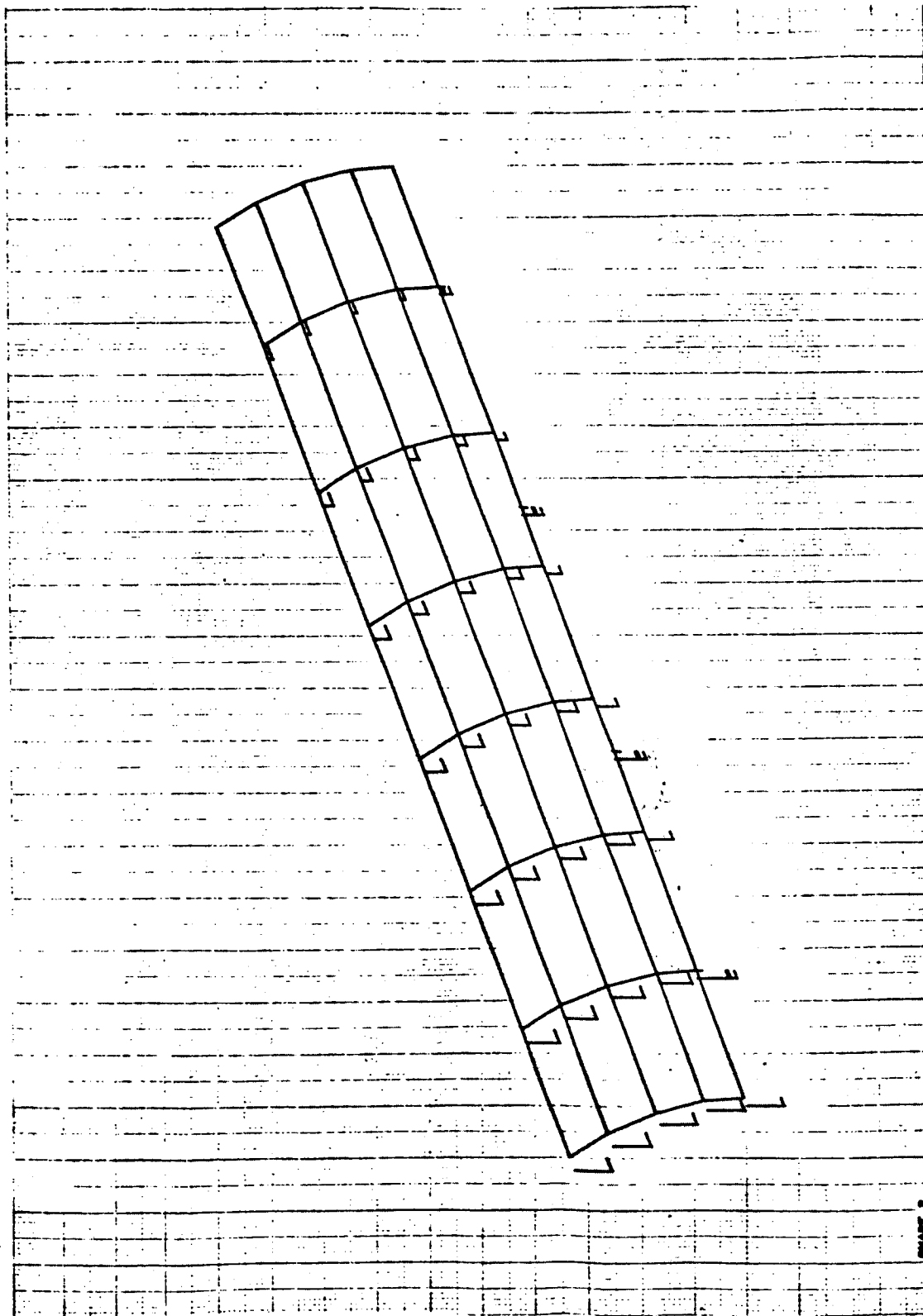
PHASE 2  
ORBITER OCCURS, SYN CASE (WITH STRAPS)  
ORBITER FREE FREE MODES  
MODAL DEFOR. SURFACE 1 MODE 1 FREQ. 0.

2 10/10/74 000-007, = 0.4100012



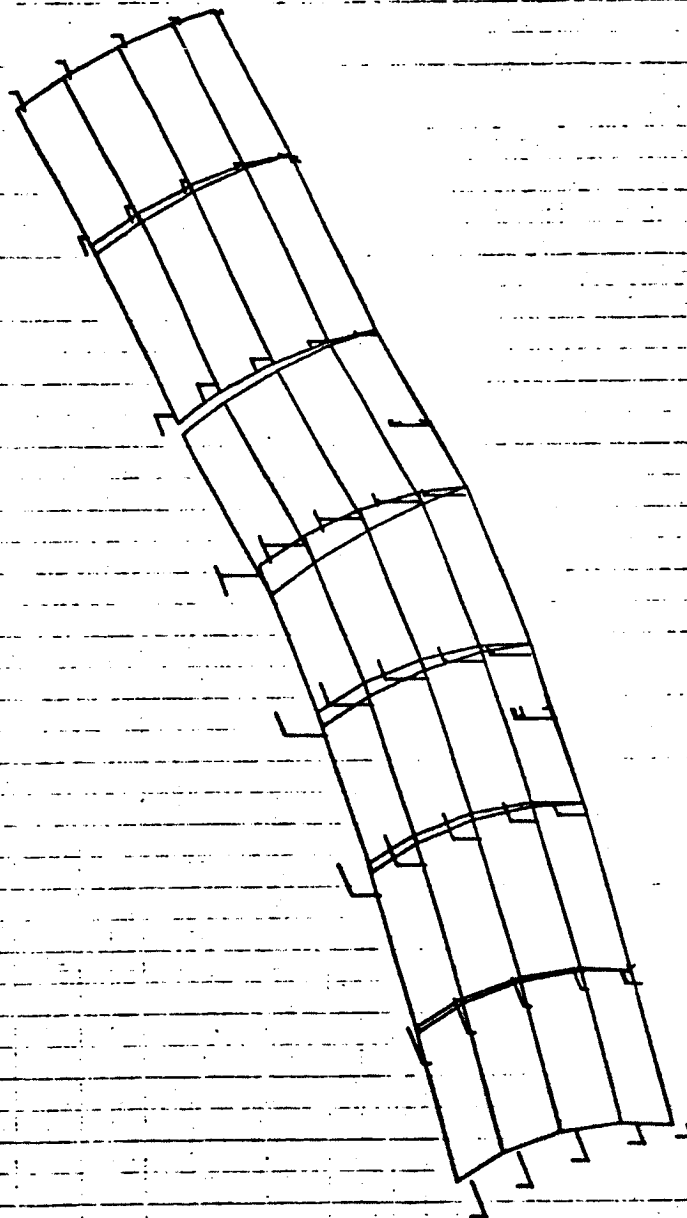
PHASE 3  
 CRIBTER 00000, 000 GARE (WITH STRAP)  
 CRIBTER FREE FREE MODES  
 MODAL DEFORM. BUSCASE 2 MODE 2 FREQ. 0.

3 18/10/74 1400-007. • 1.00000000



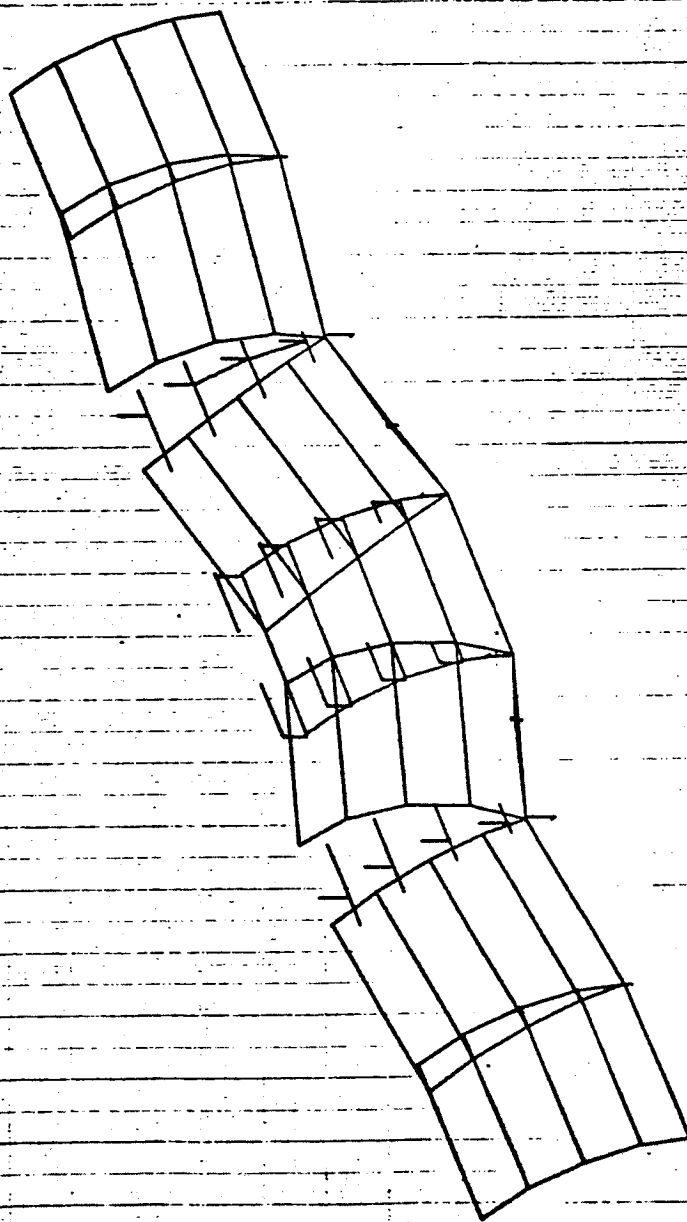
PHASE 3  
CRITER DOORS, SYM GARS (WITH STRAPS)  
CRITER FREE FREE MODES  
MODAL DETOR. SUBCASE 3 MODE 3 FREQ. 0.

10/15/74 144-027, - 0. 97700000



PHASE 3  
CRIBTER DOORS, SYN CASE (WITH STRAPS)  
CRIBTER FREE FREE MODES  
MODAL DETON. SUBCASE 4 MODE 4 FREQ. 44.11971

10/18/74 1000-027. 0 1.0511110

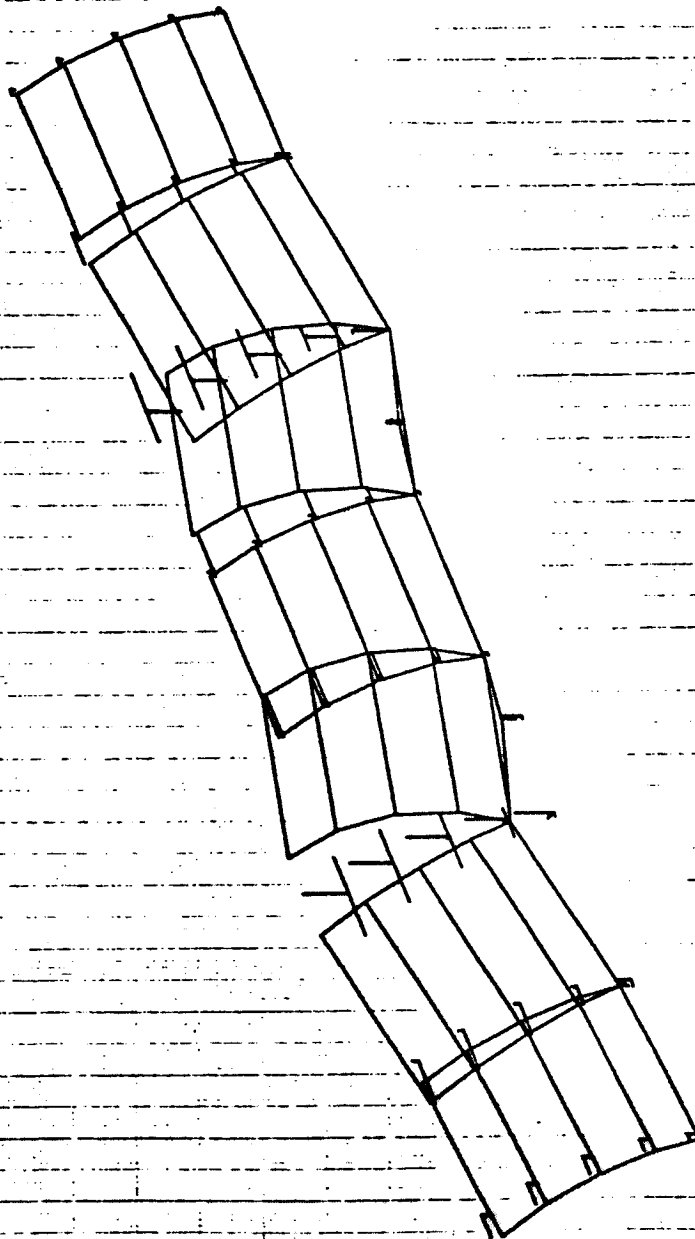


PHASE 5  
CHILTER 00000.000 CASE (WITH STRAPS)  
CHILTER FREE FREE MONRO  
MODAL DOCTOR. SUBCASE 5 MODC 5 FREC. 45.38640



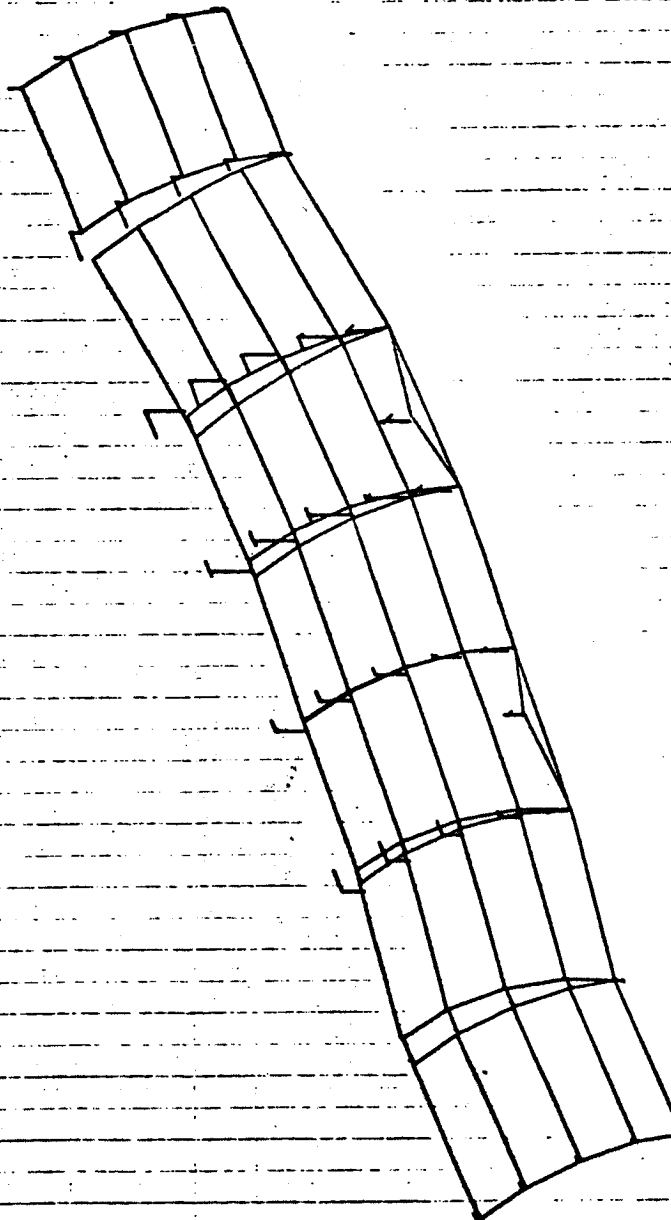


1 10/10/74 100-007. = 0.00011004



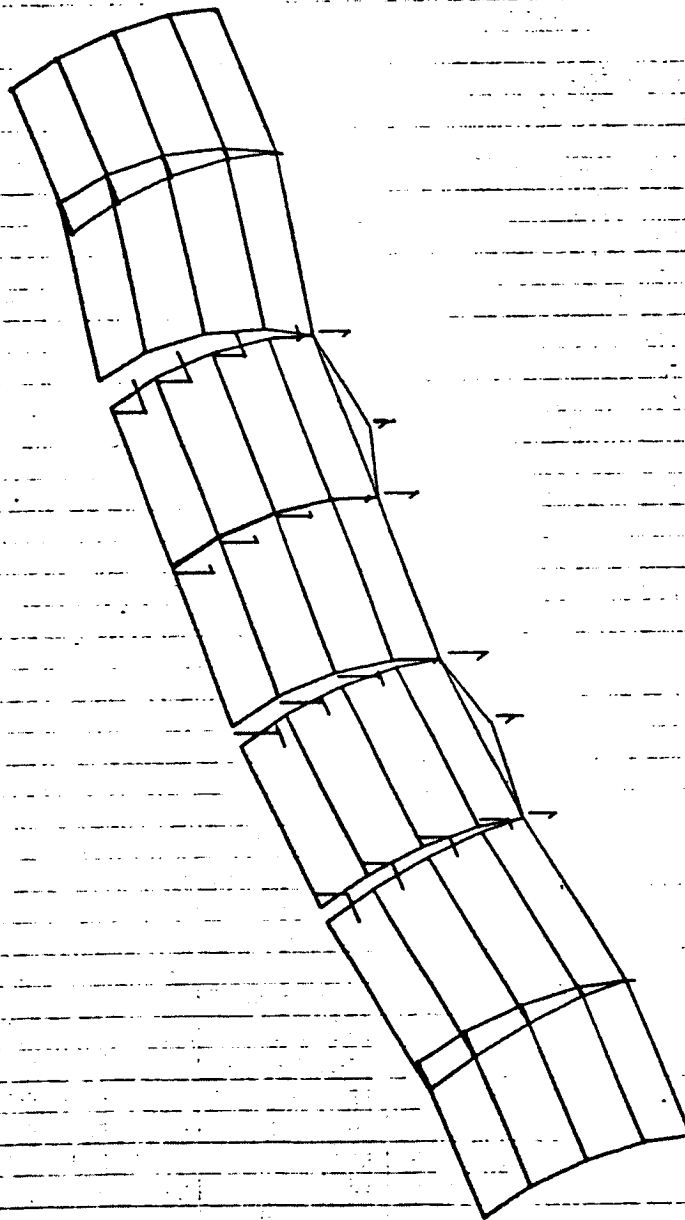
PHASE 3  
ORBITER ORDS. BYM CASE WITH STRAP  
ORBITER FREE FREE MODES  
MODAL DETOR. SUBCASE 7 MODE 7 FREQ. 84.43372

10/18/74 1400-207. • 0. 70000000



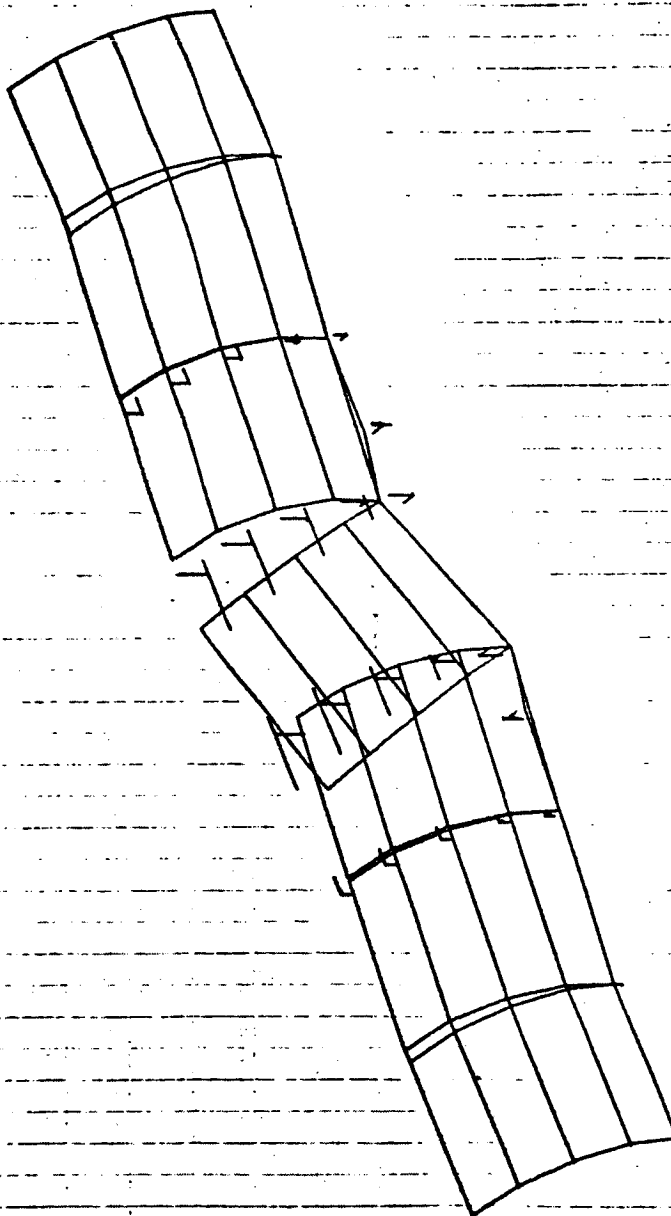
PHASE 3  
CRITER 80000, 8000 CASE (WITH STRAPS)  
CRITER FREE FREE MOVER  
MEDAL DEVER, SURGARE 8 MODE 8 FREED. 02. 71604

18/10/74 MM-027, 1.57225100



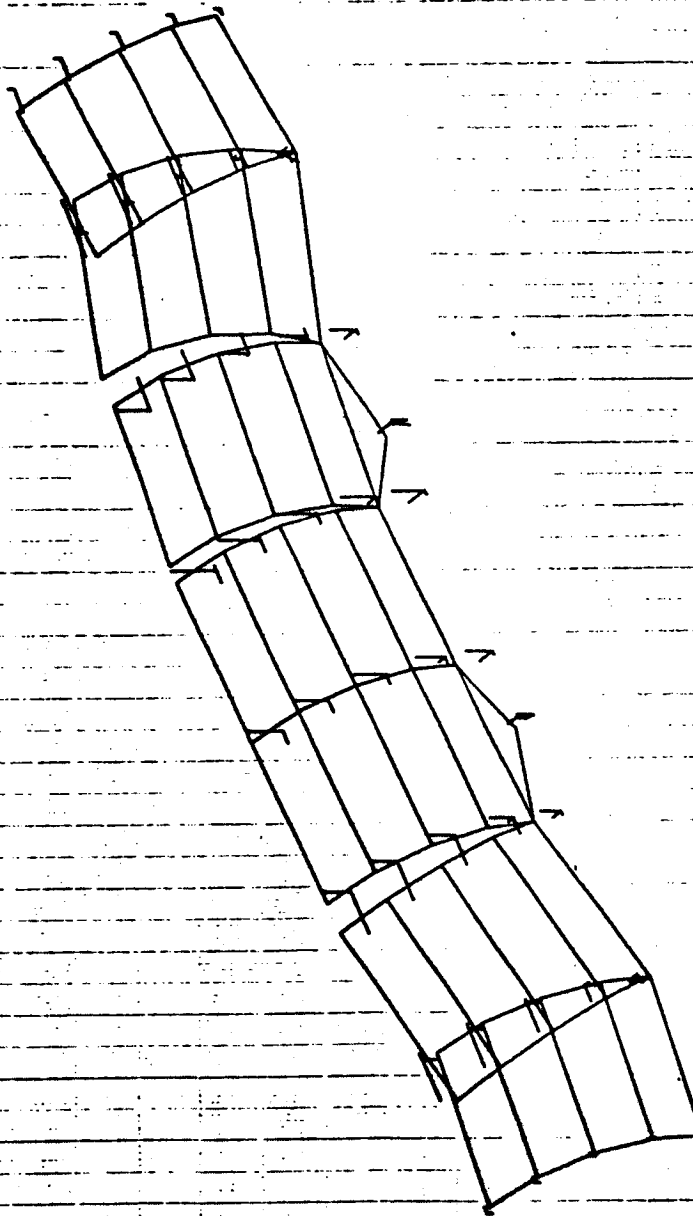
PHASE 3  
CRITER DOME, 0.04 CASE WITH STRAPS  
CRITER FREE FREE MODES  
MODAL DEFOR. SUBCASE 1 MODE 1 FREQ. 96.00001

10 10/18/74 MM-027. = 1.4514770



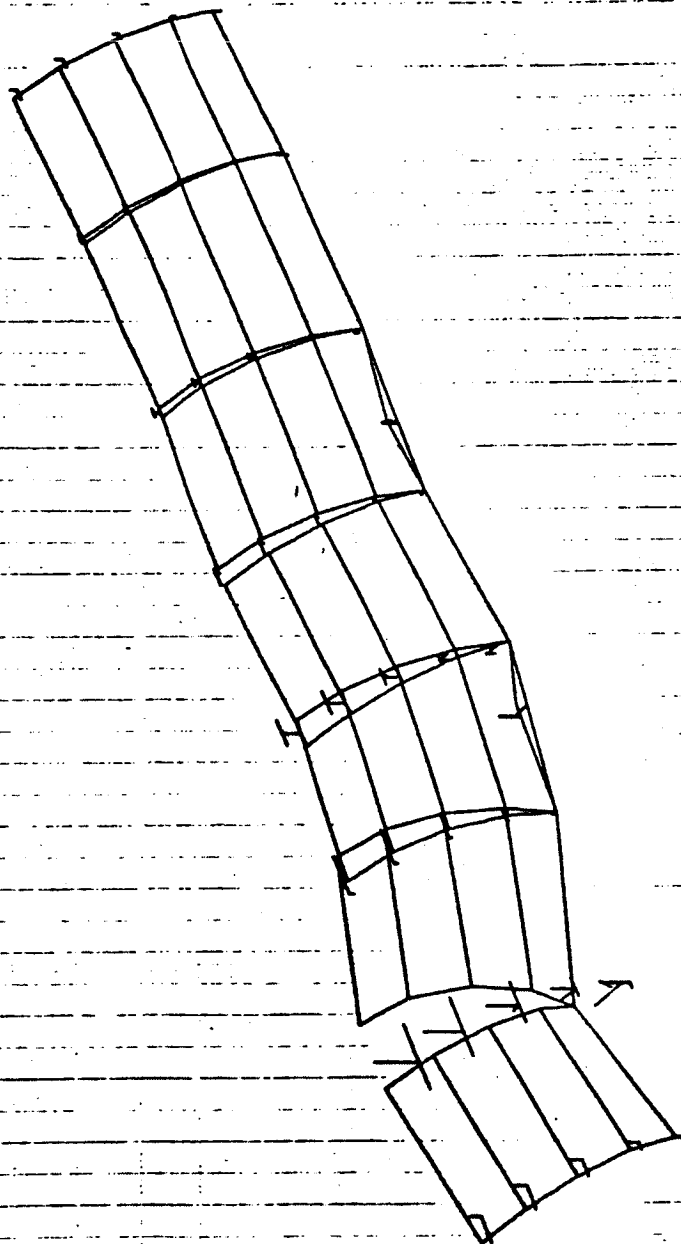
PHASE 3  
ORBITER DOORS, BYM CASE (WITH STRAPS)  
ORBITER FREE FREE MODES  
MODAL DEFORM. SUBCASE 10 MODE 10 FREQ. 78.71848

11 10/10/74 MMS-227, = G. 0029-0000



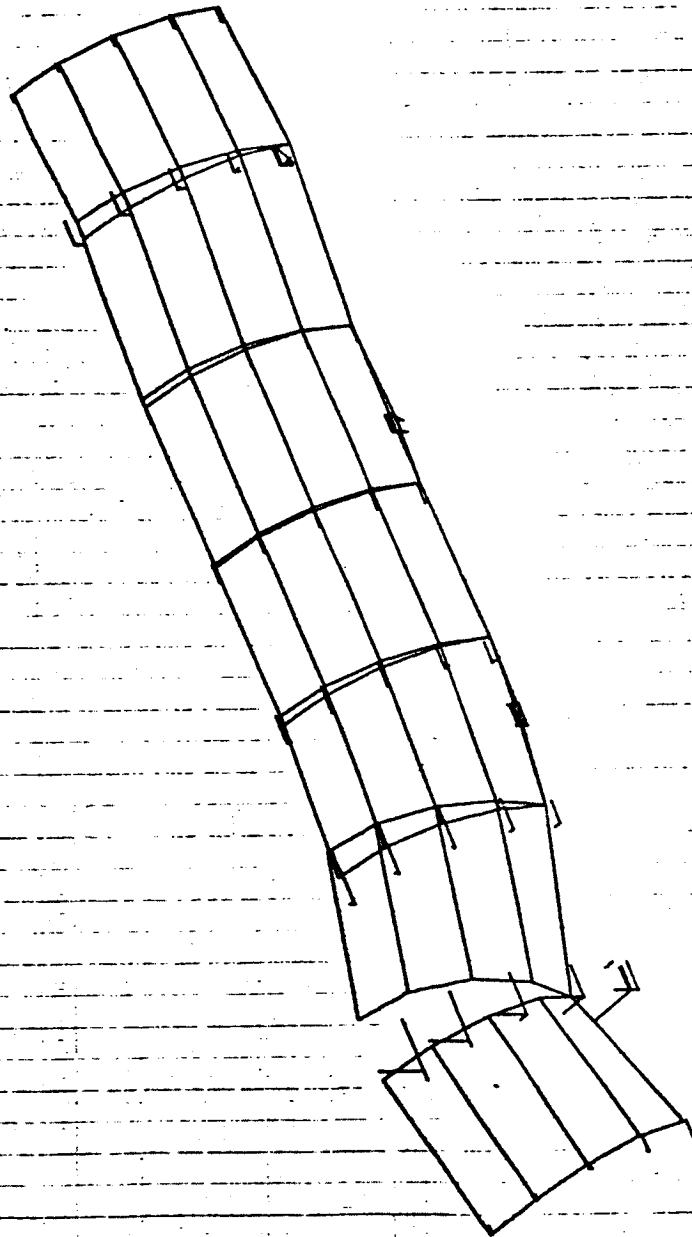
PHASE 2  
ORBITER BEHIND, EVA CASE WITH STRAPS  
ORBITER FREE FREE MOVES  
MODAL DEFORM, SUBCASE 11 MODE 11 FREE. 03.11100

18 10/18/74 MMW-027. • 1.48800000



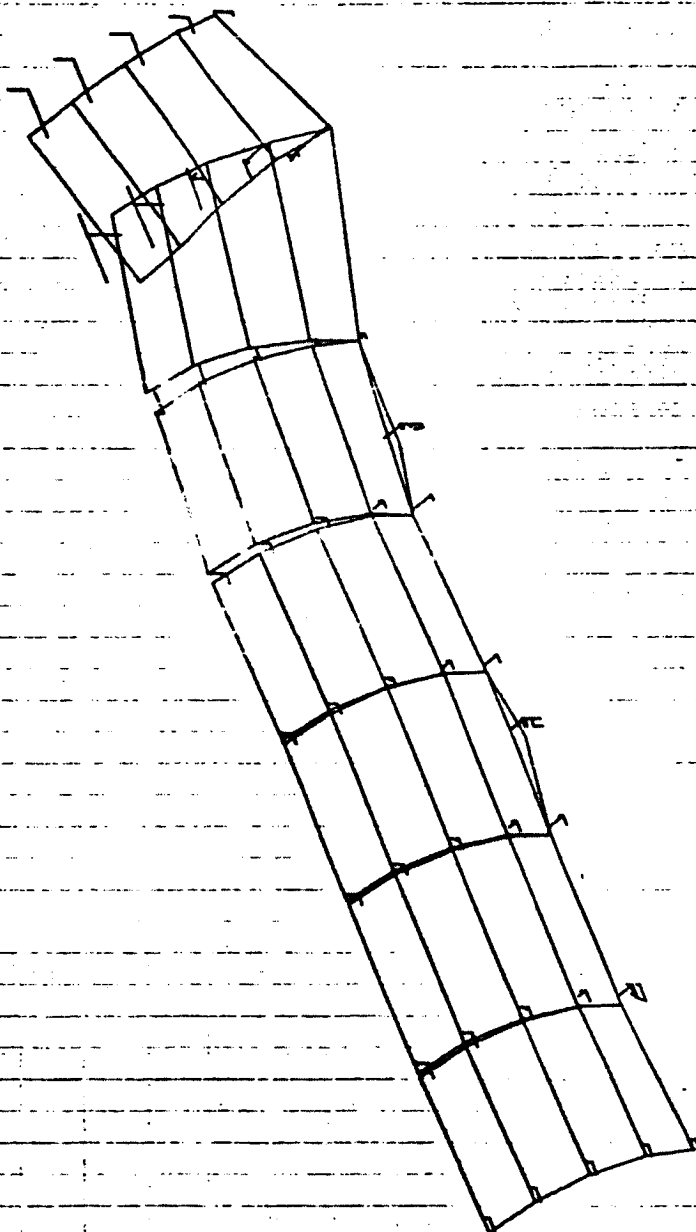
PHASE 3  
CRITTER DOORS, 8TH CASE (WITH STRAPS)  
CRITTER FREE FREE MODES  
MODAL DEFOR. SURFACE 12 MODE 12 FREQ. 104.7641

18 10/18/74 100-807, = 1.0003740



PHASE 2  
ORBITER GORRIS,SYM CASE (WITH STRAPS)  
ORBITER FREE FREE MODES  
MODAL DEFOR. SUBCASE 13 MODE 13 PRCD. 118.8278

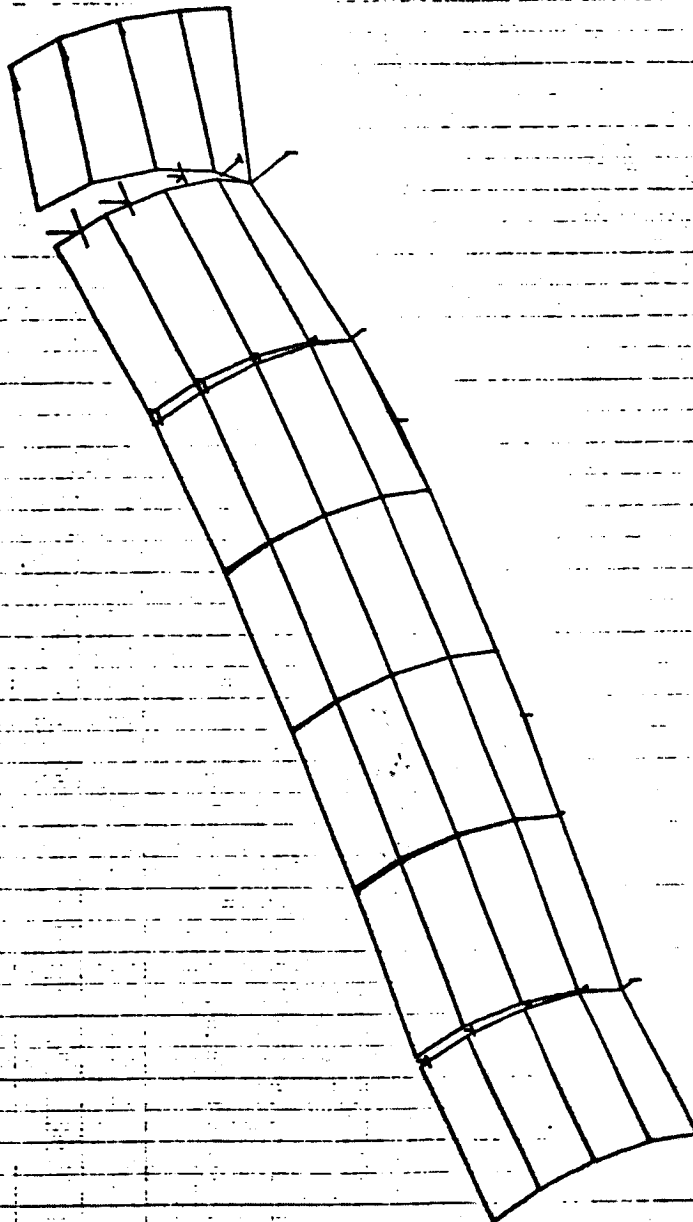
14 10/18/74 MAX-QST. = 0.4120004



PHASE 3  
CRITER OCCURS BYM CASE WITH STRAPS  
CRITER FREE FREE MODES  
MEDAL OCCUR. SUBCASE 14 MODE 14 FREQ. 12.12004



10 10/10/74 1001-007. 1.0000000

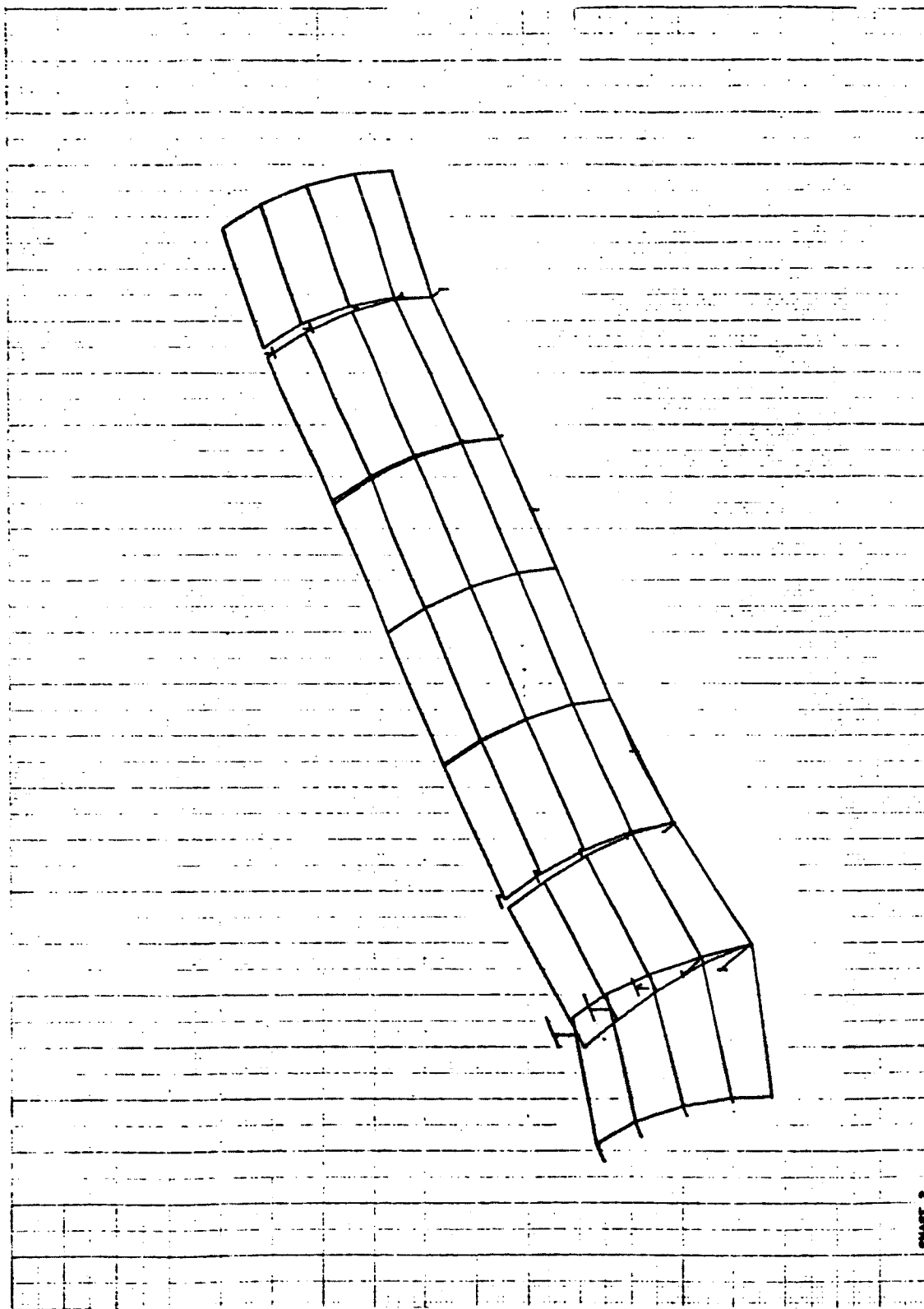


PHASE 3  
ORDER MODS. FROM GAGE WITH STRAPS  
ORDER FREE FREE MODS  
MODAL DEFOR. SURFACE IS MODS 16 FREE. 129.9481

16

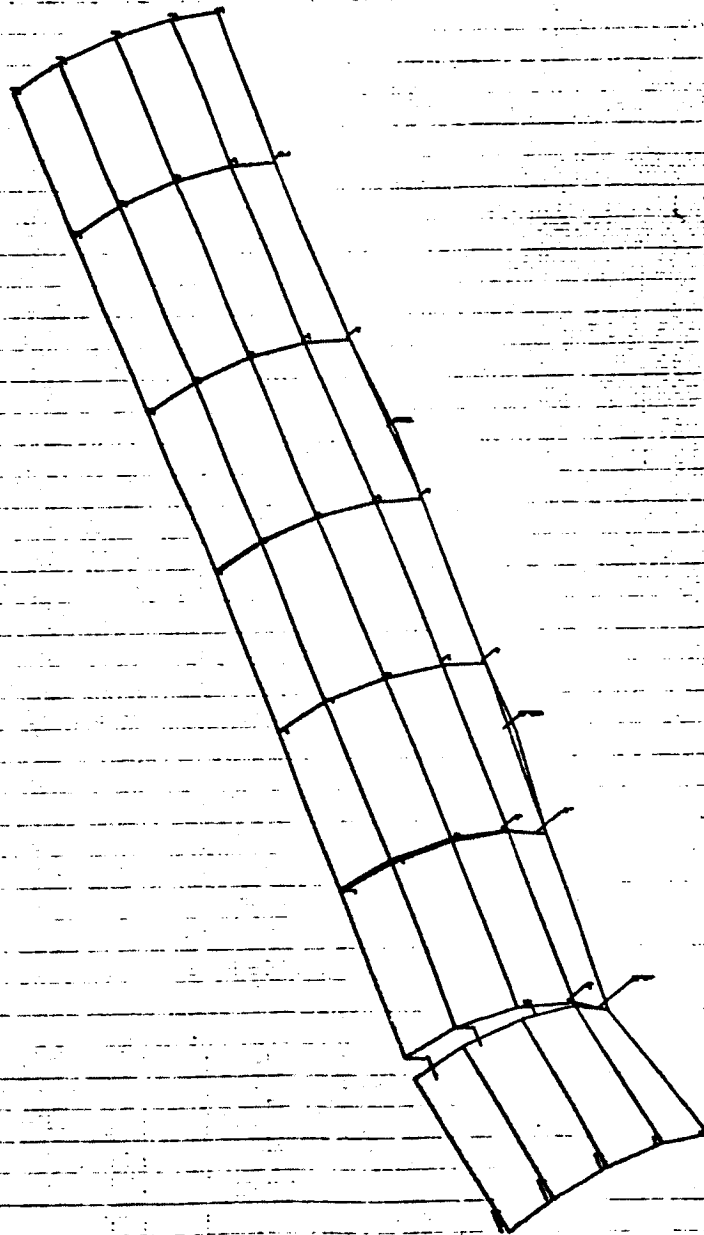
10/18/74 0001-0017, 0 1.0001-0000

16



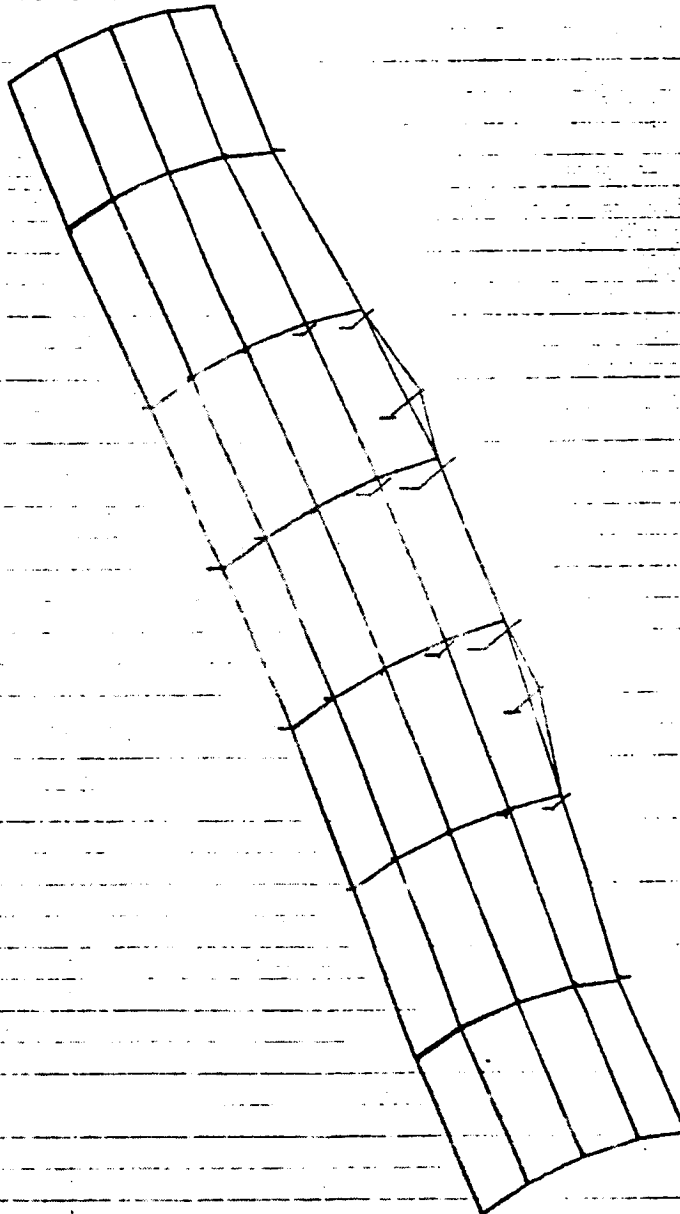
PHASE 2  
ORBITER DOORS, BYM CASE (WITH STRAPS)  
ORBITER FREE FREE MODES  
MODAL DEFOR. SURFACE 16 MODE 18 FREE, 190.8833

14 10/18/74 MAX-SEP. = 1.01817640



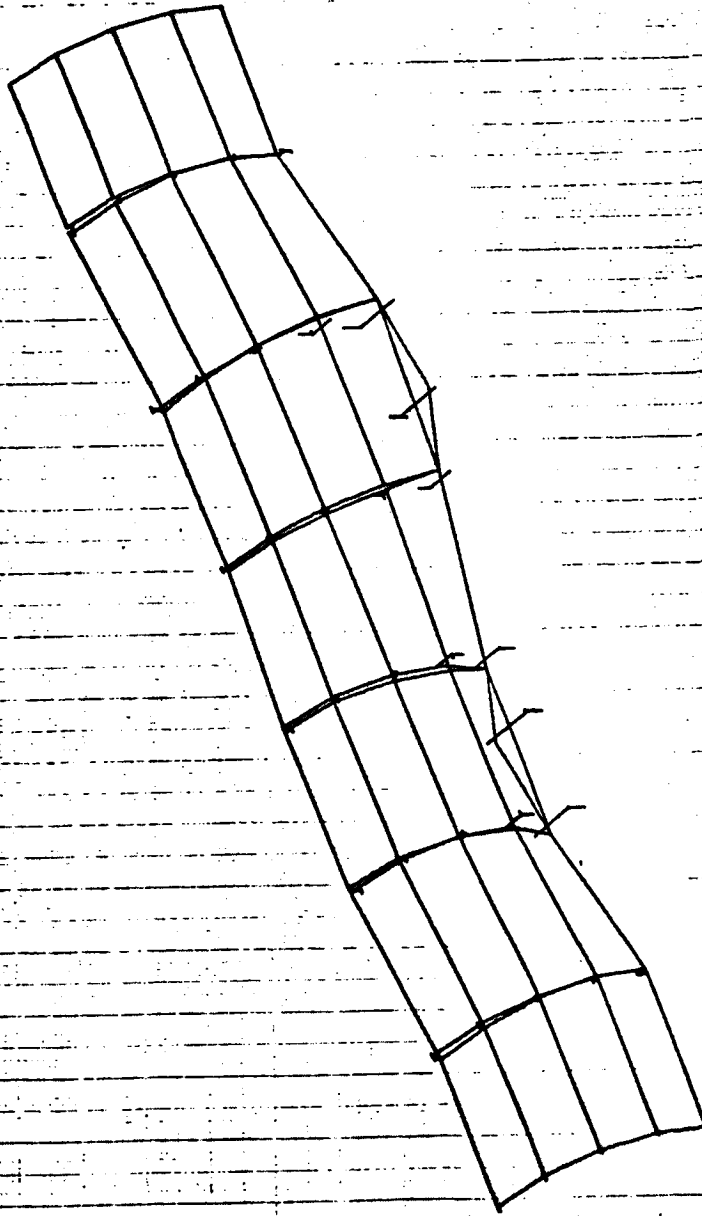
PHASE 3  
ORBITER DOORS, BYM CASE (WITH STRAPS)  
ORBITER FREE FREE MODES  
MODAL DEFER. SUBCASE 17 MODE 17 FREQ. 142.1388

18 10/10/74 MAX-REF. = 1.00000000



PHASE 3  
 ORBITER DOORS, BYM CASE (WITH STRAPS)  
 ORBITER FREE FREE MODES  
 LOCAL DEFON. SUBCASE 18 MODE 18 FREQ. 189.6369

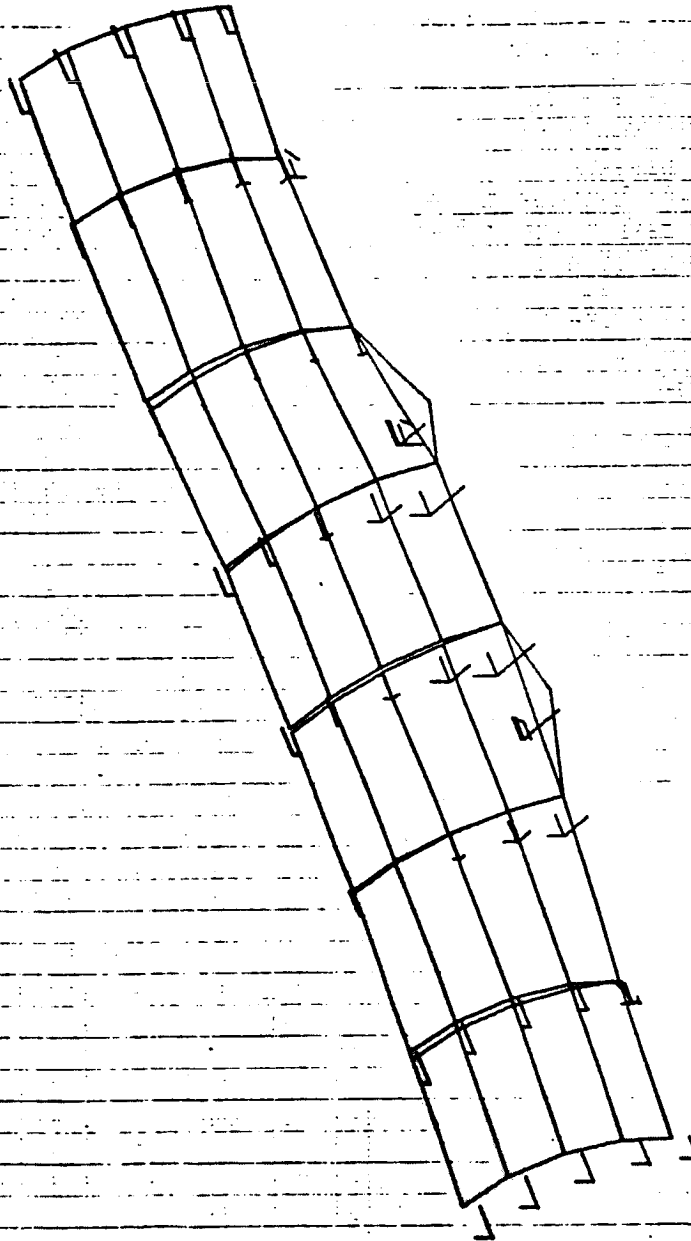
19 10/18/74 100-807.0 1.11700000



PAGE 3  
GOOD, SYN GARC WITH STRAPS  
CHRYST PRIC PRIC MOORE  
MODAL DEFOR. SUSCASE 19 MOORE 19 PRIC. 100.0000

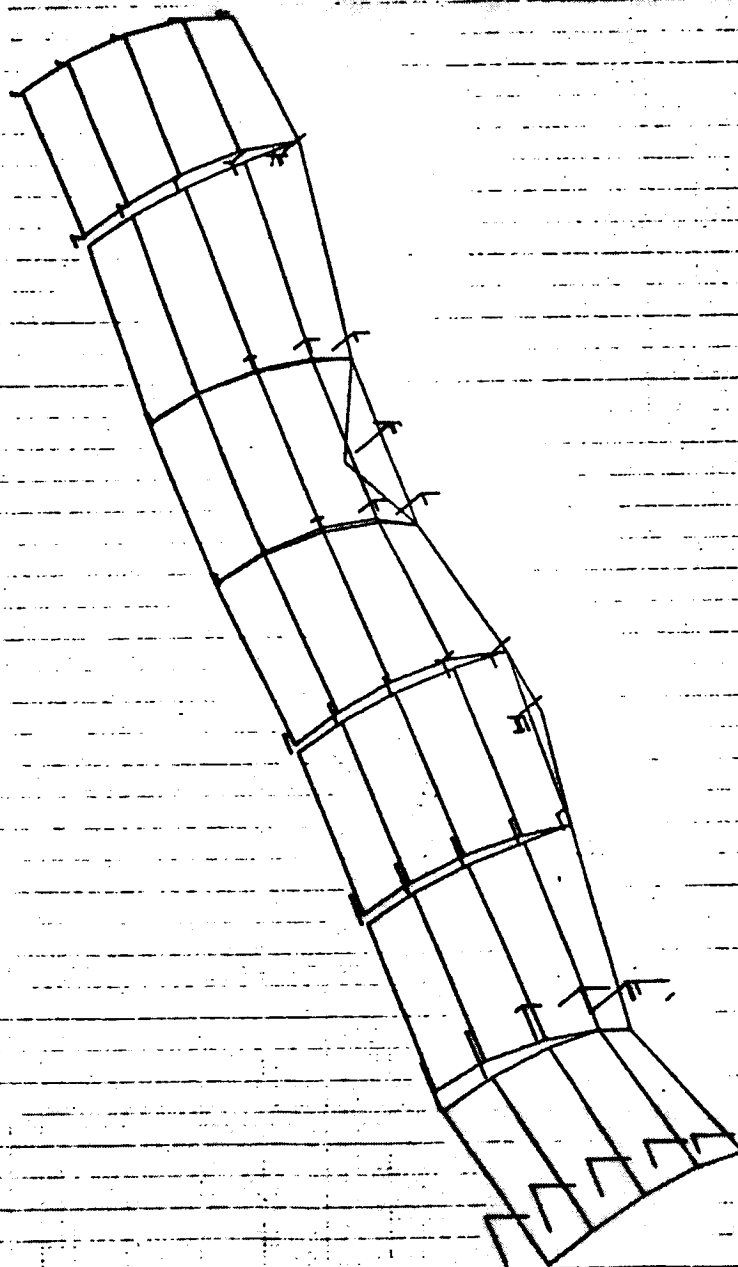
20

10/15/74 1000-007, S. 0.0000000



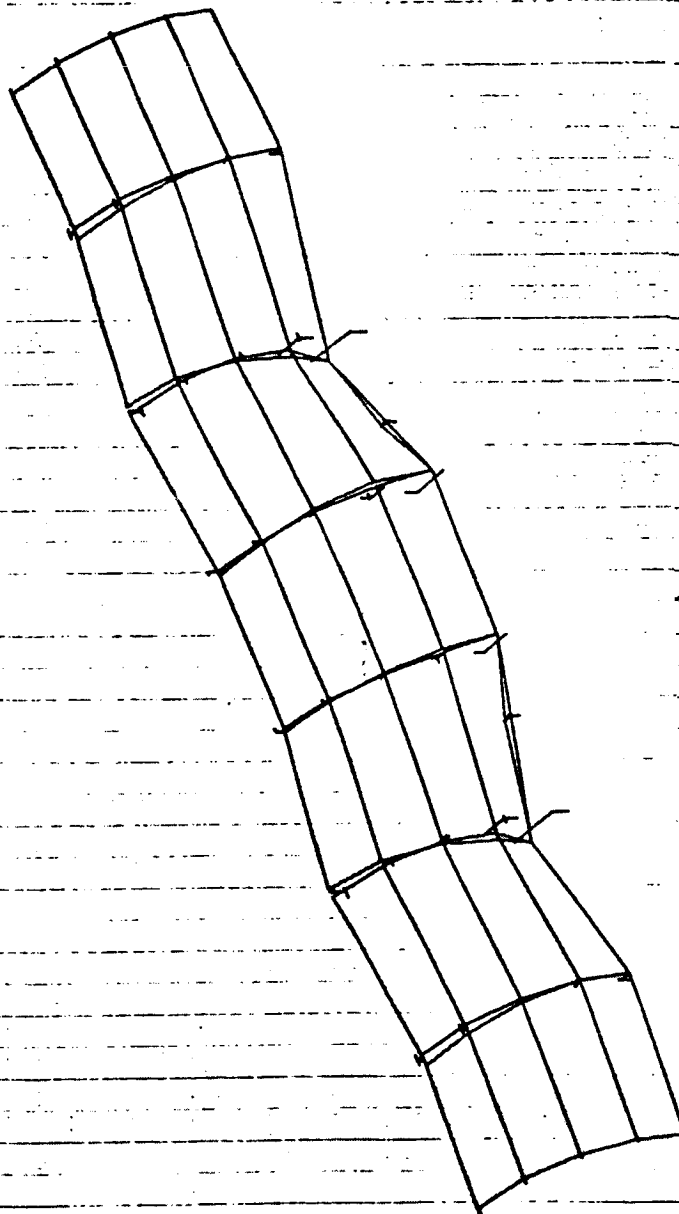
PHASE 2  
CRITER BODDING, BY CASE WITH STRAPES  
CRITER FREE FREE MOSES  
MODAL DEFOR. SURFACE 20 MODE 20 FREQ. 171.7384

21 100-107-14 100-107-14 100-107-14



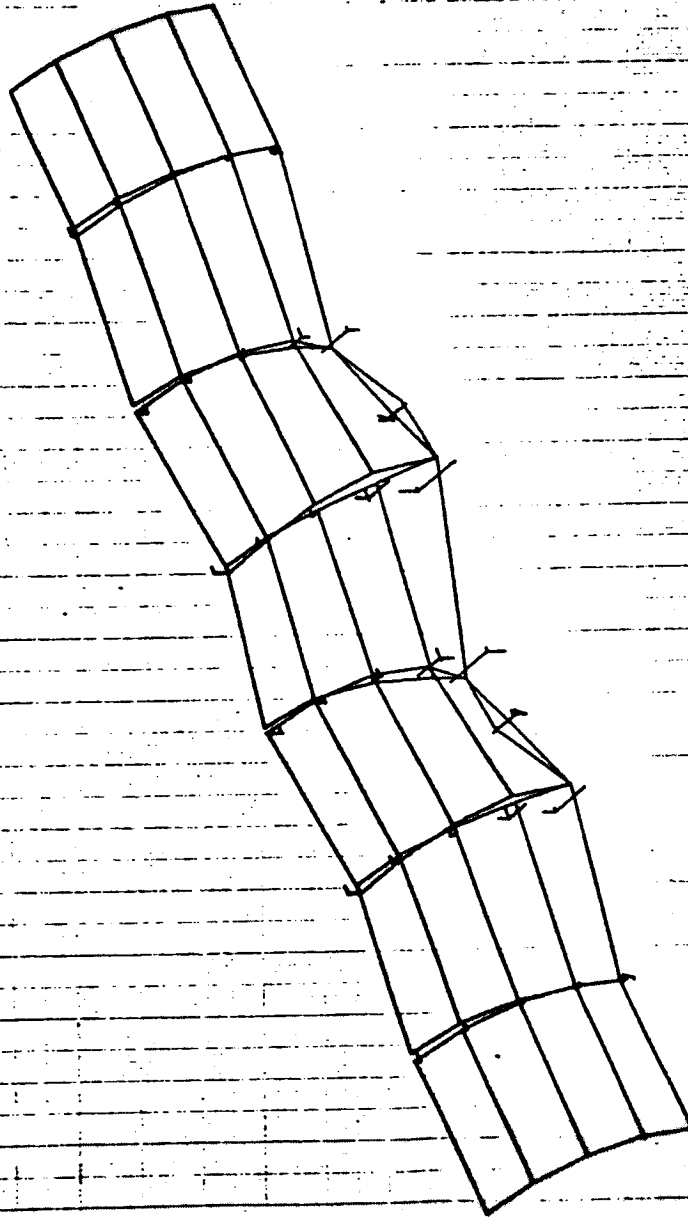
PHASE 2  
 CRITERIA SCORING SYSTEM (WITH STRAP)  
 CRITERIA FREE FREE FREE  
 MODAL DETON. SUBCARE 21 MODAL 21 MODAL 100-107-14

18/18/74 MAN-007, = 1,0279000



PHASE 3  
 ORBITER SCORING SYS CASE WITH STRAPS  
 ORBITER FREE FREE MODES  
 MODAL DEFER. SUBCASE 22 MODE 22 FREQ. 140.2363



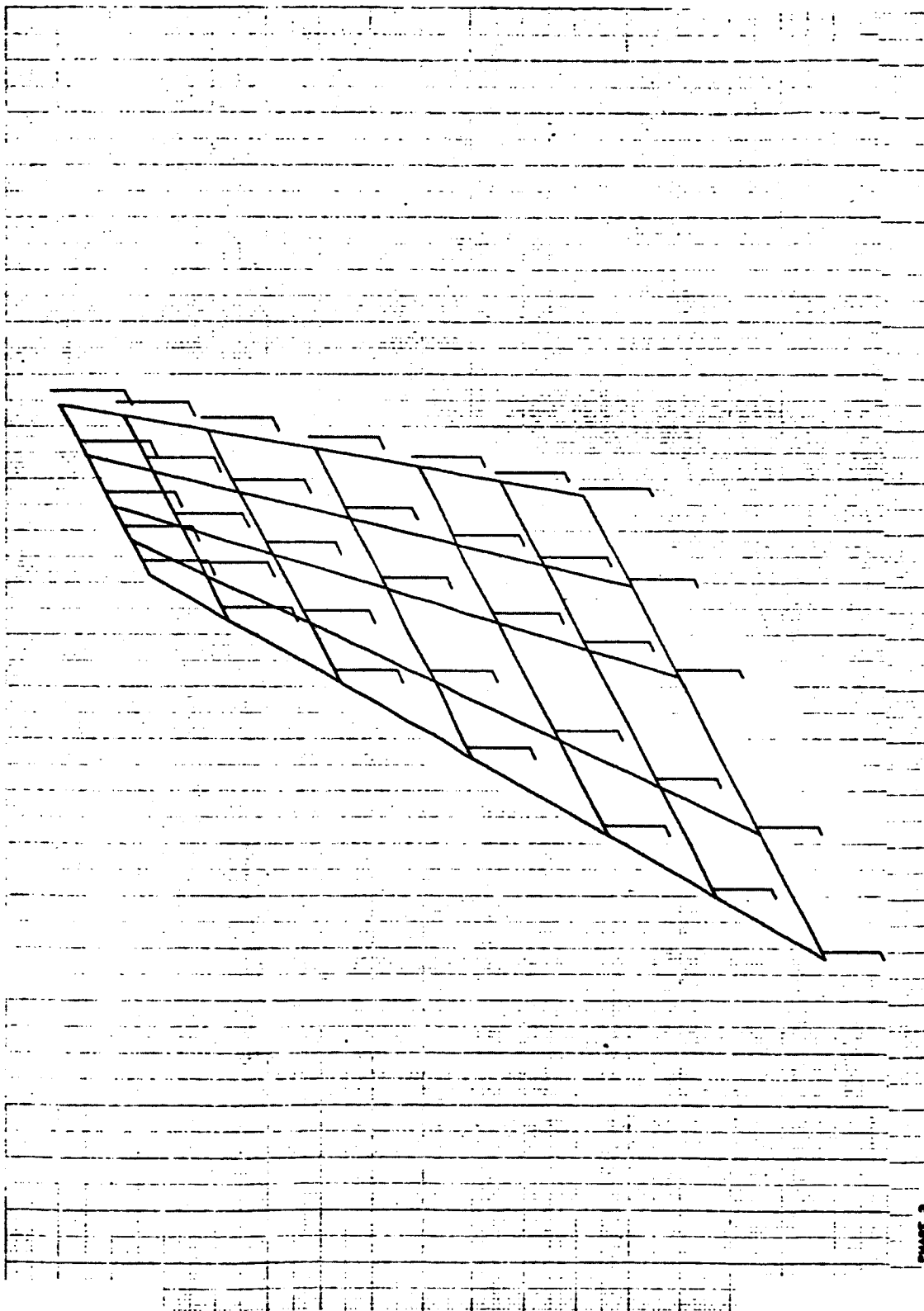


PAGE 3  
CRISLER ENGINE, 8794 GASE WITH STRAPS)  
CRISLER FREE FREE MOORE  
MOAL SEVEN. SUBCASE 23 MOORE 23

**Appendix B17**  
**INPUT & PLOTS/PHASE 3 ANALYSIS: MODEL II FIN**  
**SYMMETRIC FREE-FREE ORBITER MODES**

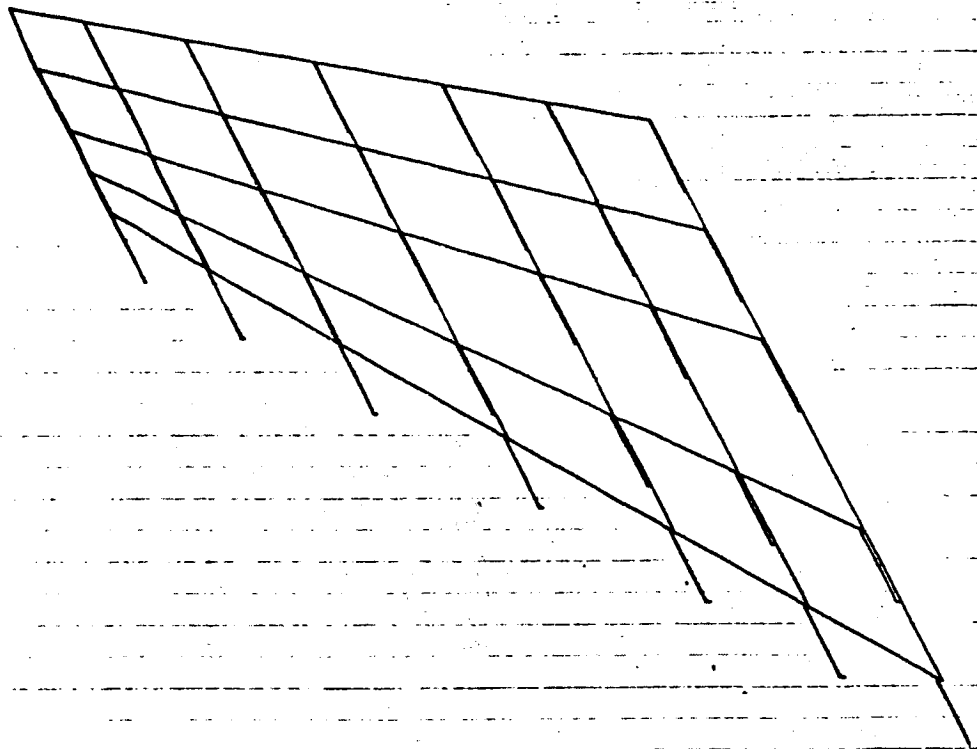
B17-1

1 10/19/74 100-207, - 1.013-0410



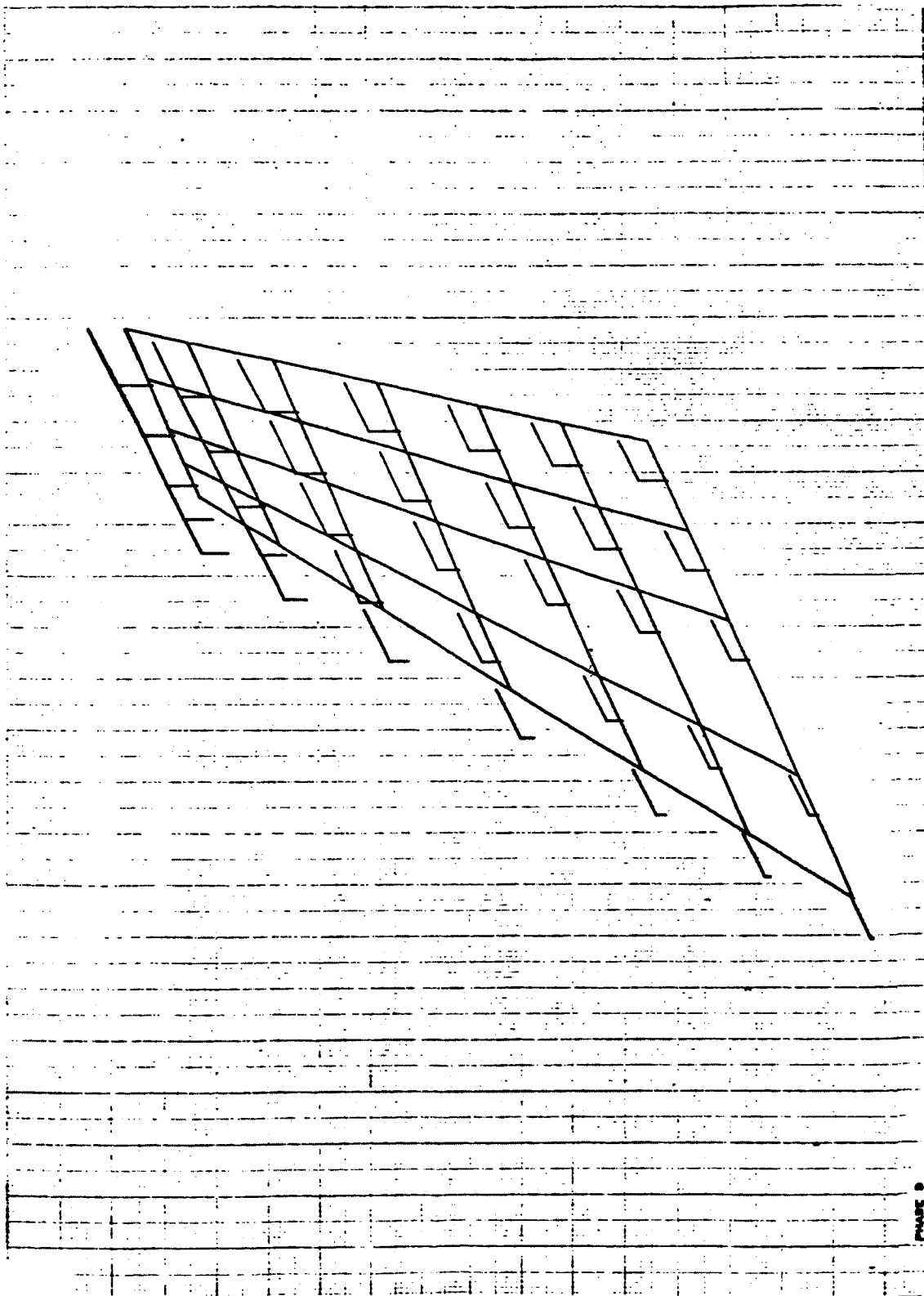
PHASE 3  
FIN-8744 (WITH 0711000)  
ORBITER FREE PRICE MONROE  
MODAL DEFOR. SUBCASE 1 MODE 1 PRICED. 0.

2 10/18/74 MAX-REV. = 0.11-01000



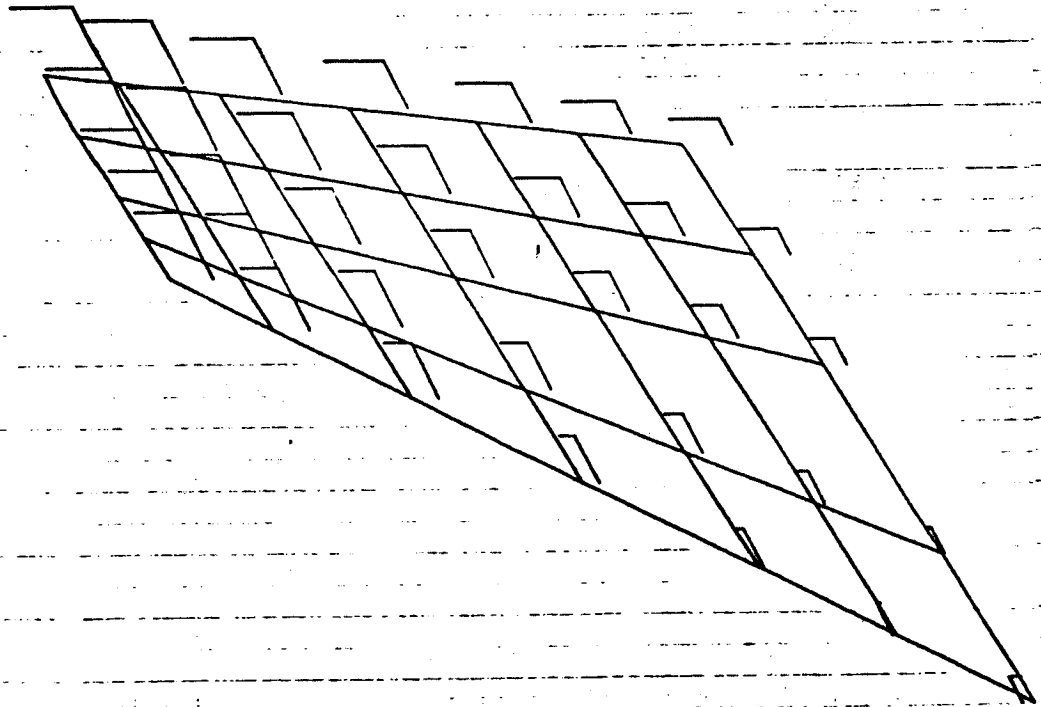
PHASE 3  
FIN-8764 (WITH SPRINGS)  
ORBITER FREE FREE MODES  
MODAL DEFOR. SUBCASE 2 MODE 2 FREQ. 0.

3 10/10/74 1000-0000, = 0.45-1000004



PHASE 3  
FIN-87141 (WITH 8711000)  
ORBITER FREE PRICE MODCS  
MODAL DETOR. SUBCARE 3 WERE 3 FREE. 0.

10/10/74 100-007, = 2, 503-10000



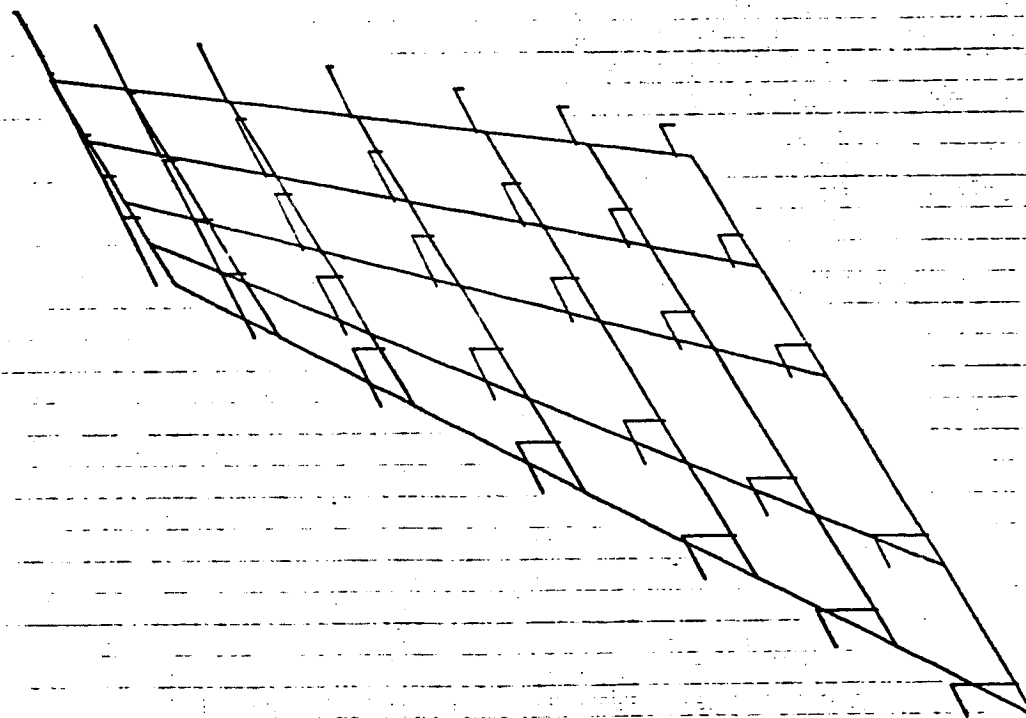
PHASE 3  
FIN-SYAM (WITH SPRINGS)  
ORBITER PREC PREC MODES  
MODAL DETOR. SURFACE 4

MODE 4 FREQ. 44.11871





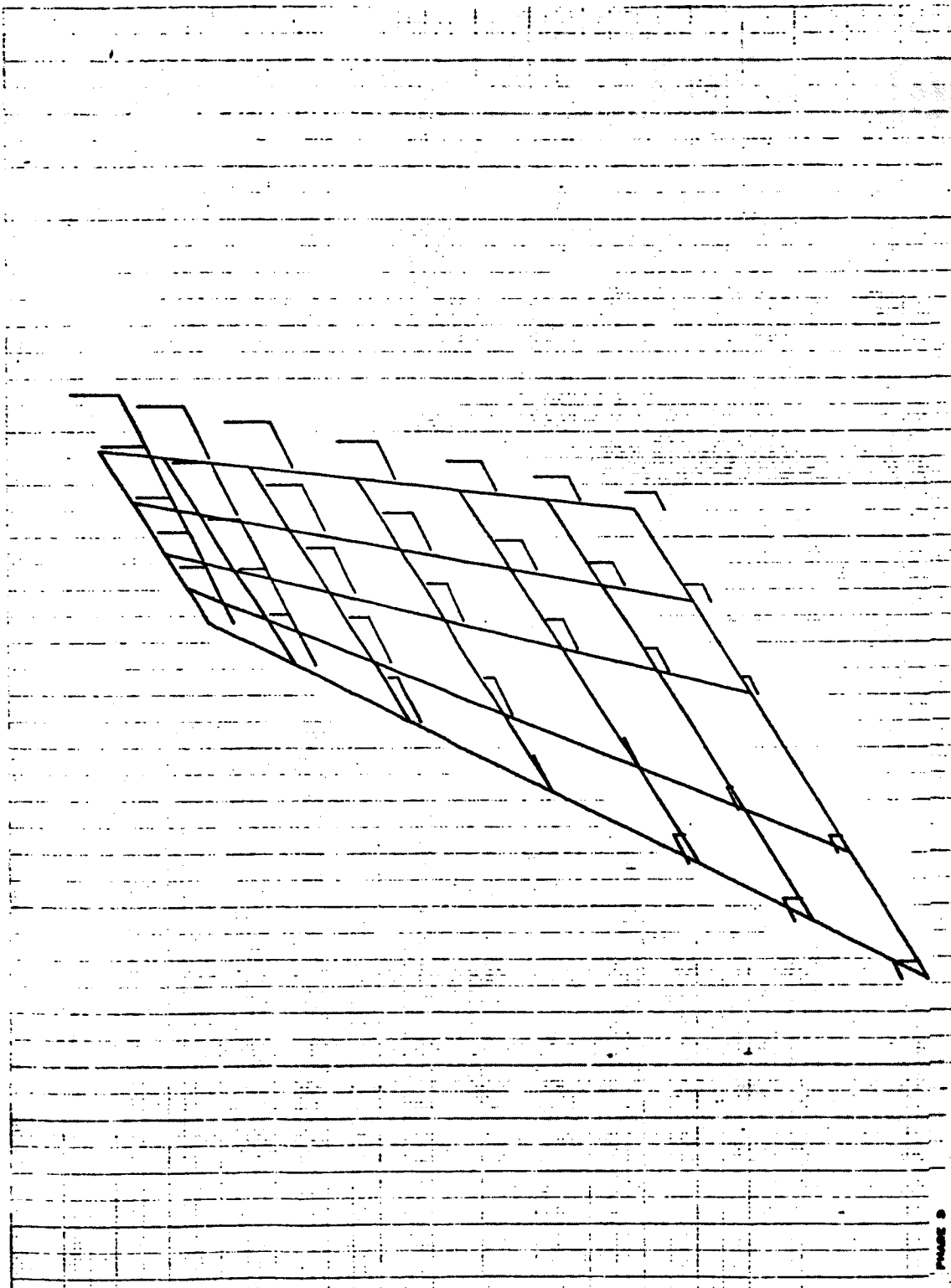
0 10/10/74 1444-007. 0 0.01000070



PHASE 3  
FIN-SYDAM WITH SPRING03  
CRISTER FREE FREE MODE8  
MODAL DEFOR. SUBCASE 6

MODE 6 FREQ. 01.20822

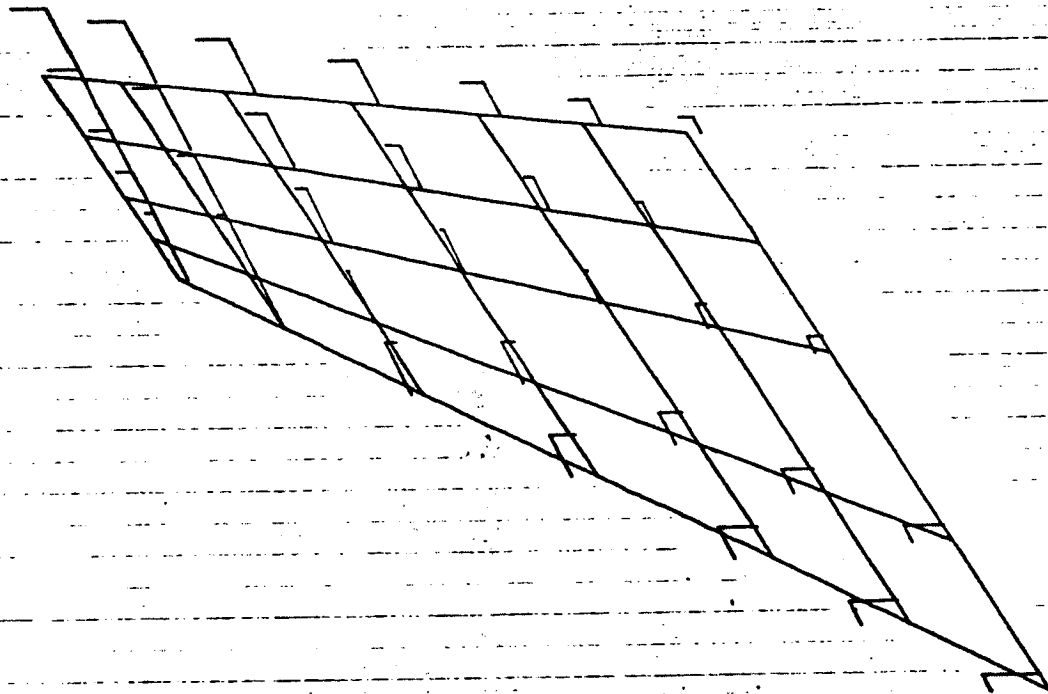
10/10/74 1400-007. = 0. 70210000



PHASE 3  
FIN-STRIP WITH SPACERS  
CRITTER FREE FREE LINES  
MEDAL DETER. SURFACES 7

WING 7 FREQ. 94.48570

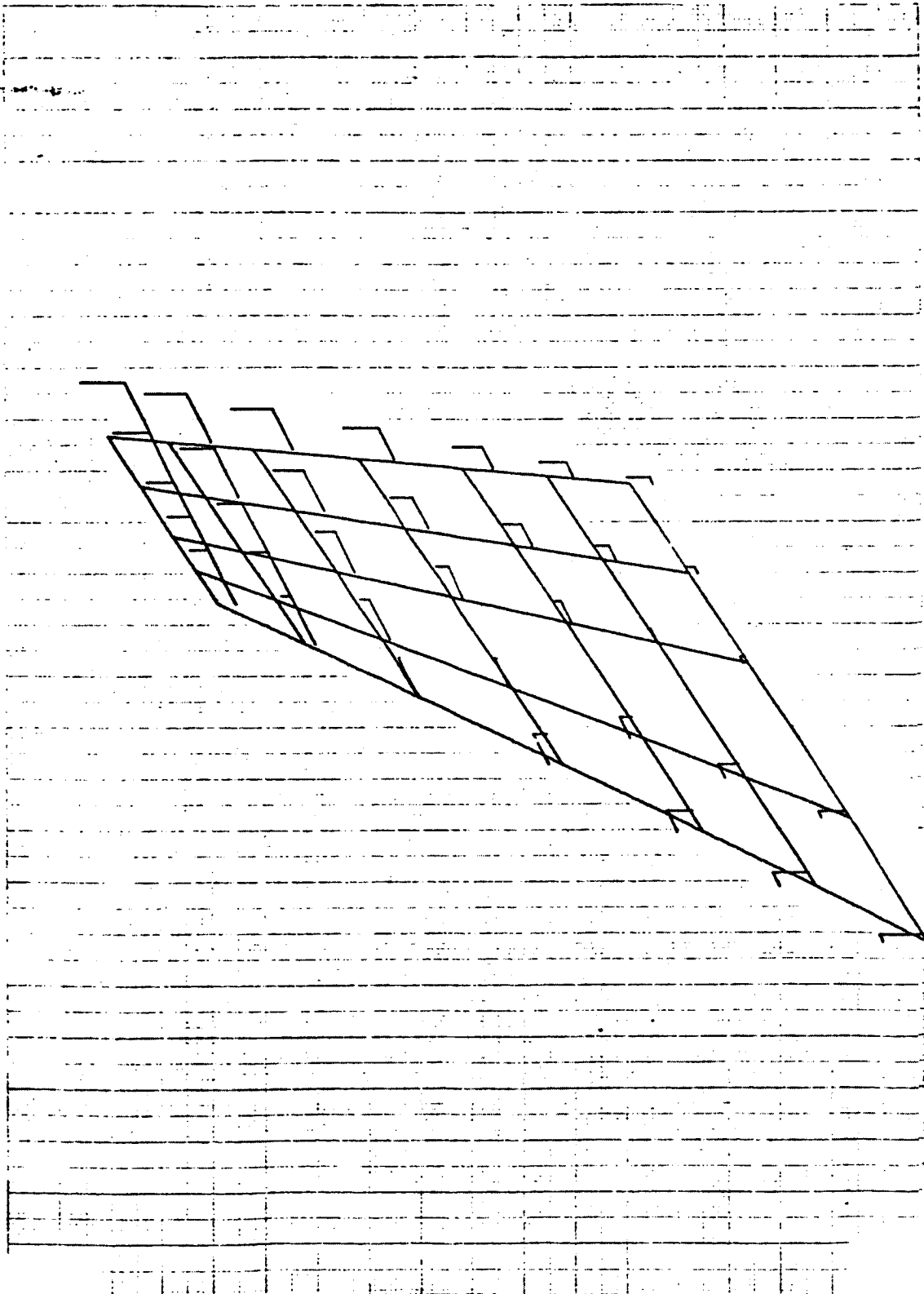
10/18/74 000-007. = 0.01248172



PHASE 3  
FIN-ENVD WITH SPRINGS  
EXETER FREE FREE MODES  
LOCAL DEFOR. SURFACE 8

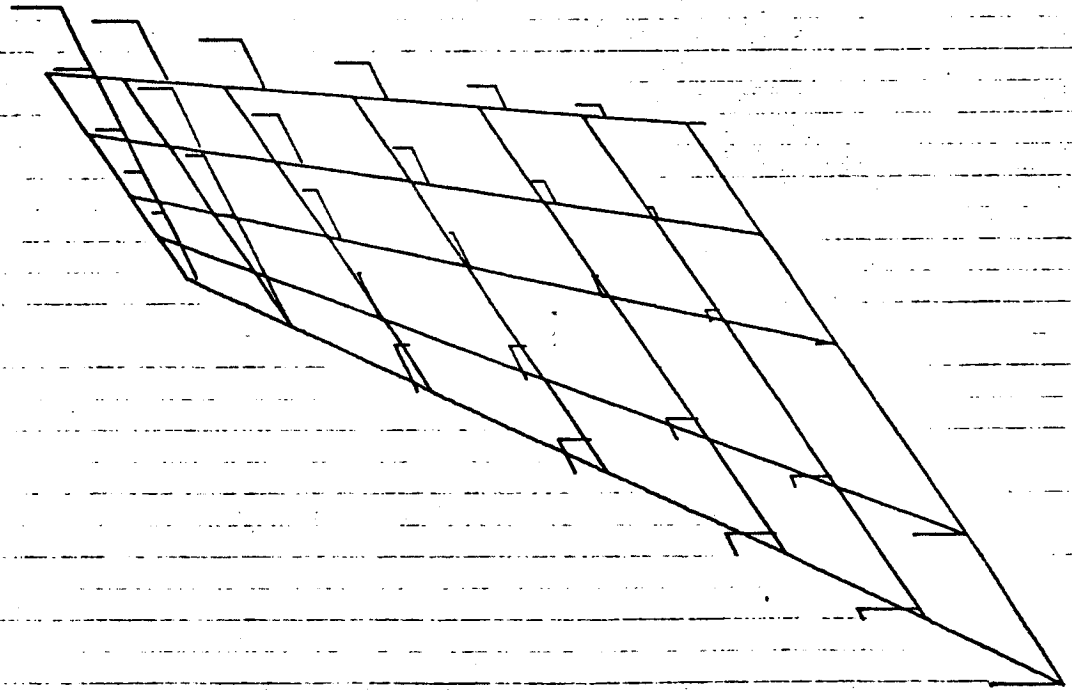
MODE 8 FREQ. 68.71664

10/10/74 1001-007, = 0.00100010

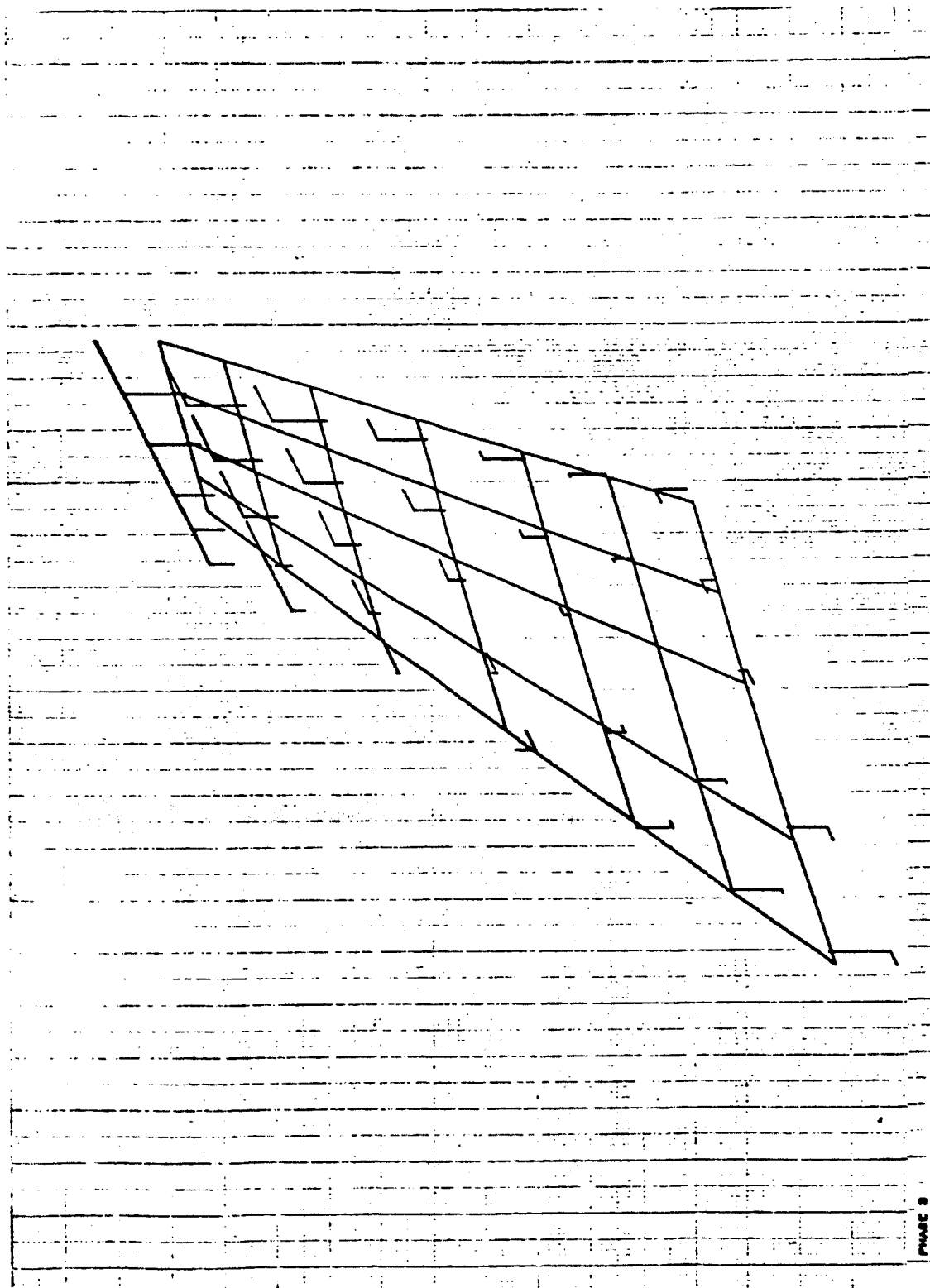


PHASE 3  
PIN-SPIN WITH SPRINGS  
CRITER FREE FREE MODES  
MODAL DEFORM. SUBCASE 1 MODE 1 FREQ. 00.00001

10 10/18/74 MAX-807, = 0.0000171



11 10/10/74 1000-007. 0.00000000

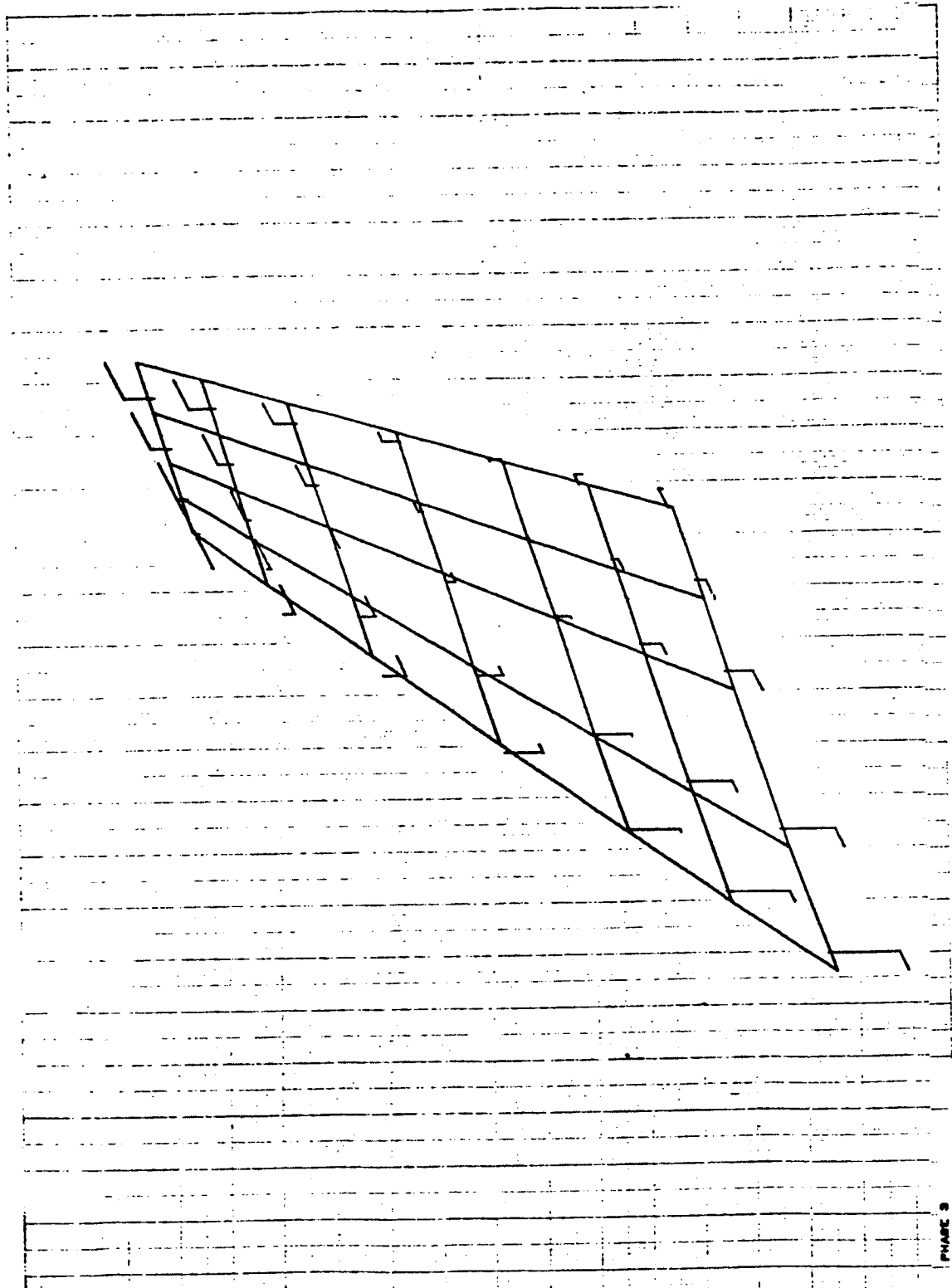


PHASE 2  
PIN-STYLE WITH SPRINGS  
CRITER FREE FREE MODES  
MODAL DEFOR. SURFACE 11

MODE 11 FREQ. 60.1100

12

12. 10/10/74 1000-007, 0.00000004

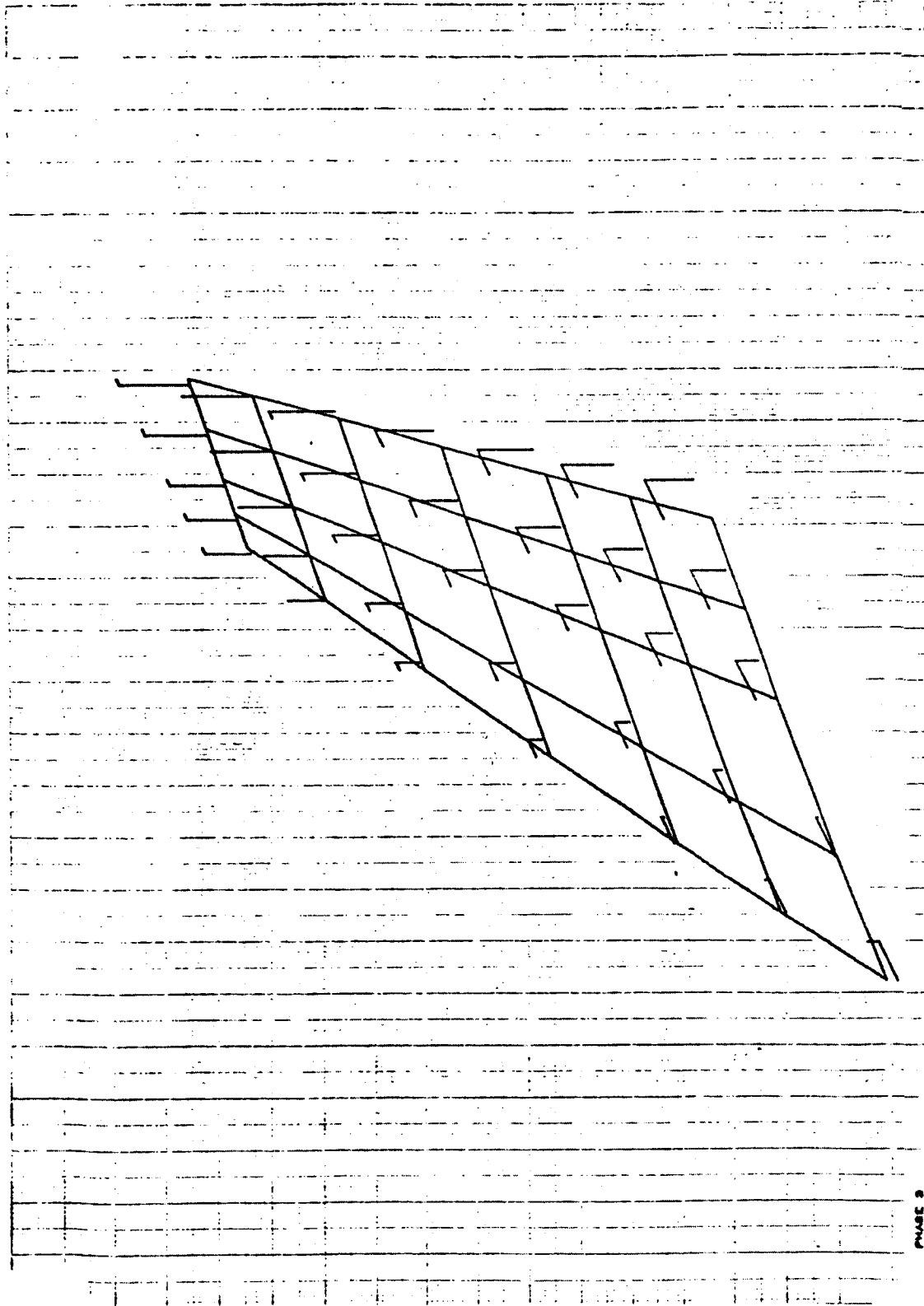


PHASE 3  
FIN-8V04 (WITH SPRINGS)  
ORBITER FREE FREE MODES  
MODAL DETON, SUBCASE 12

MODE 12 FREQ. 104.7841

10 10/18/74 MM-SEP. = 0.12571900

10

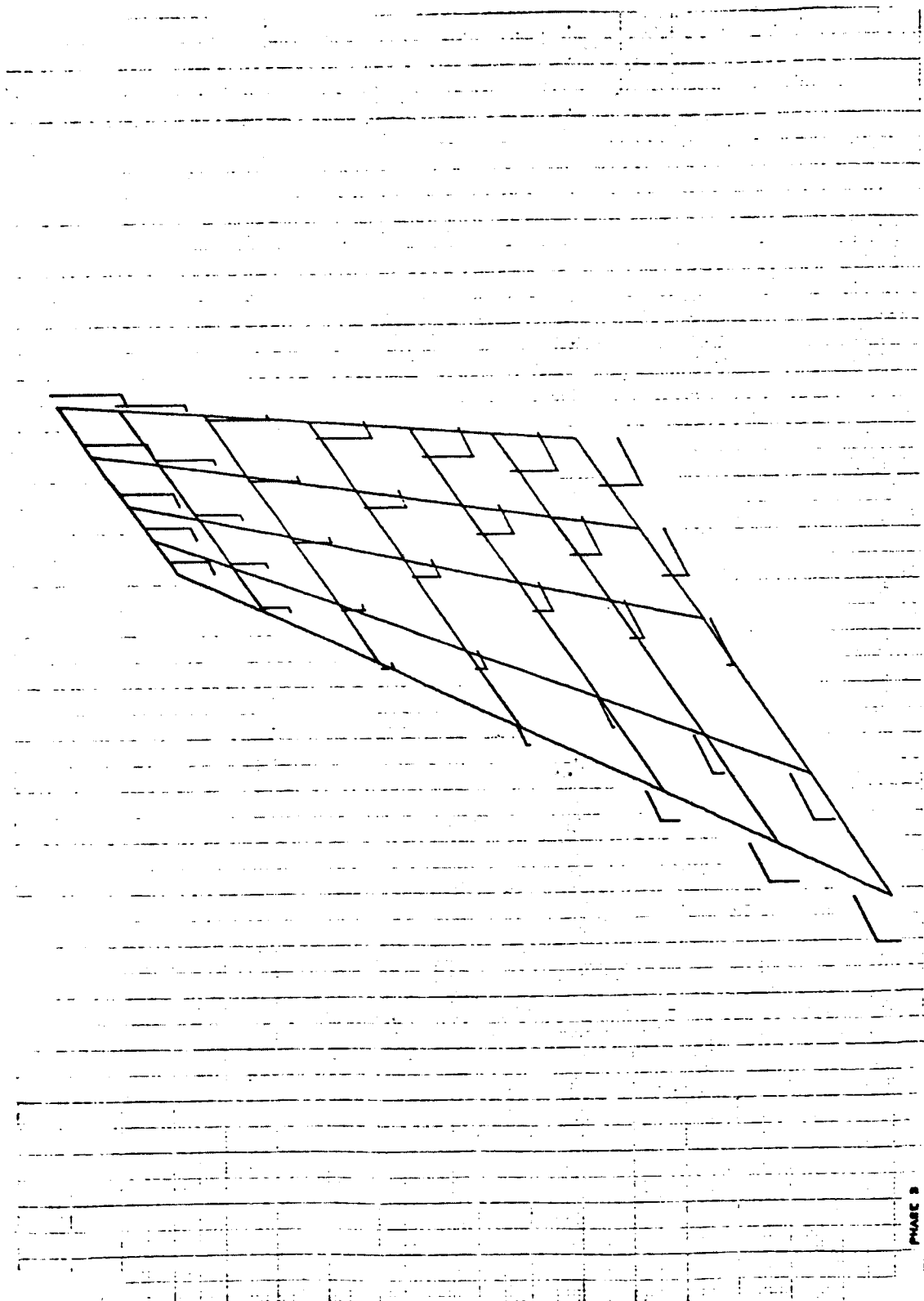


PHASE 2  
FIN-PLAN (WITH SPRINGS)  
ORBITER FREE FREE MODES  
MODAL DEFOR. SUBCASE 13

MODE 13 FREQ. 115.4276



14 10/18/74 MAN-SEP, 0.78170350



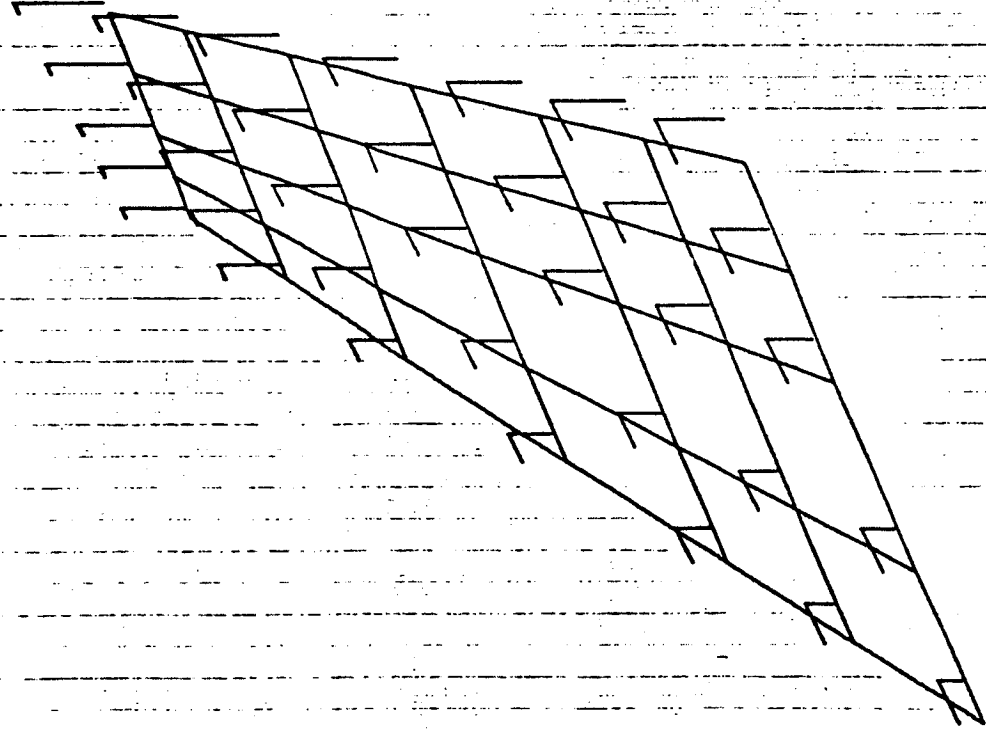
PHASE 3  
FIN-8744 (WITH SPRINGS)  
ORBITER FREE FREE MODES  
MODAL DEFORM. SUBCASE 14

MODE 14 FREQ. 122.2084

10

10/18/74 10:00 AM - 0.000000

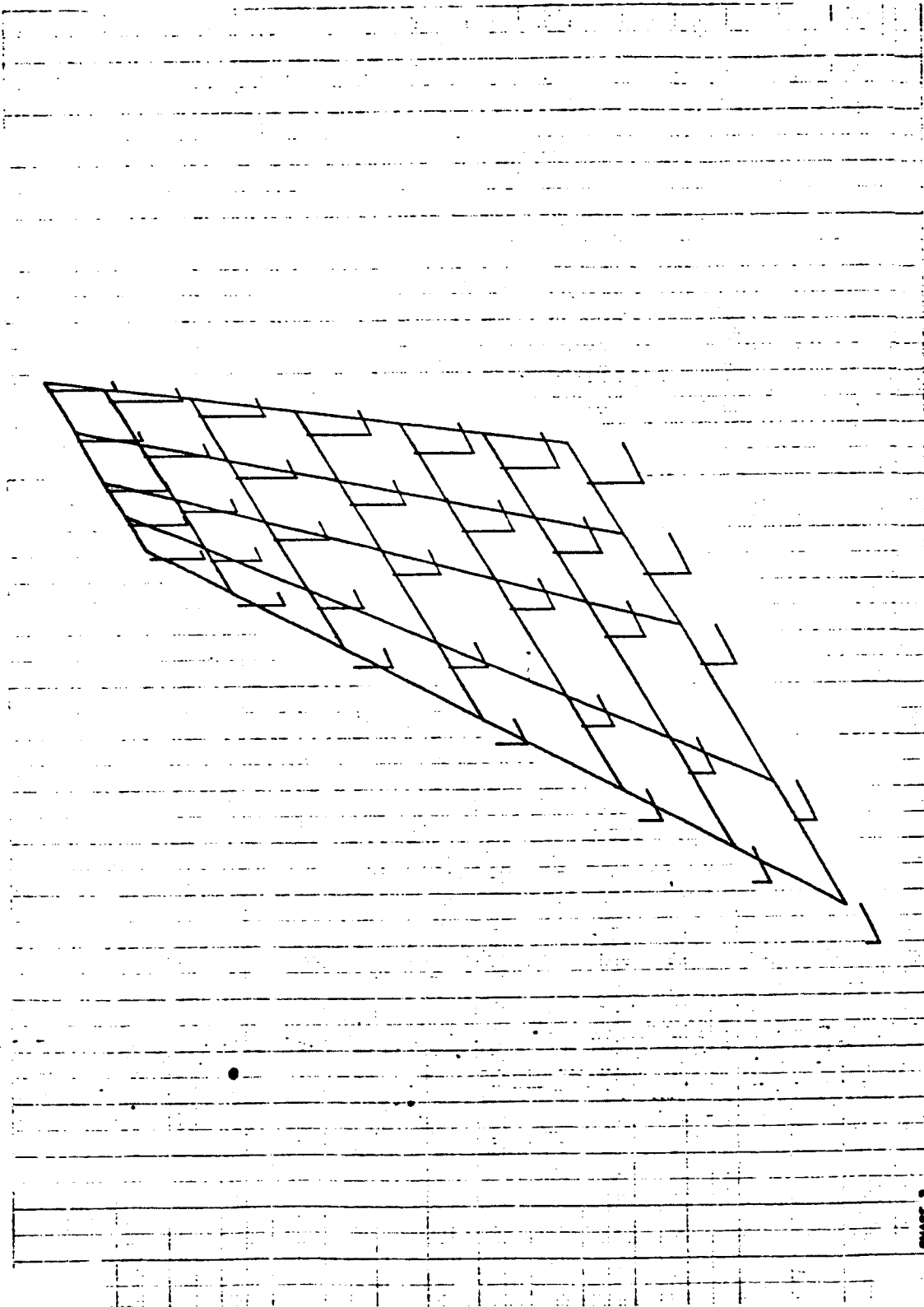
10



PHASE 2  
FIN-8704 (WITH SPRINGS)  
ORBITER FREE FREE MODES  
MODAL ORDER. SUBCASE 15 MODE 15 FREQ. 19.9491

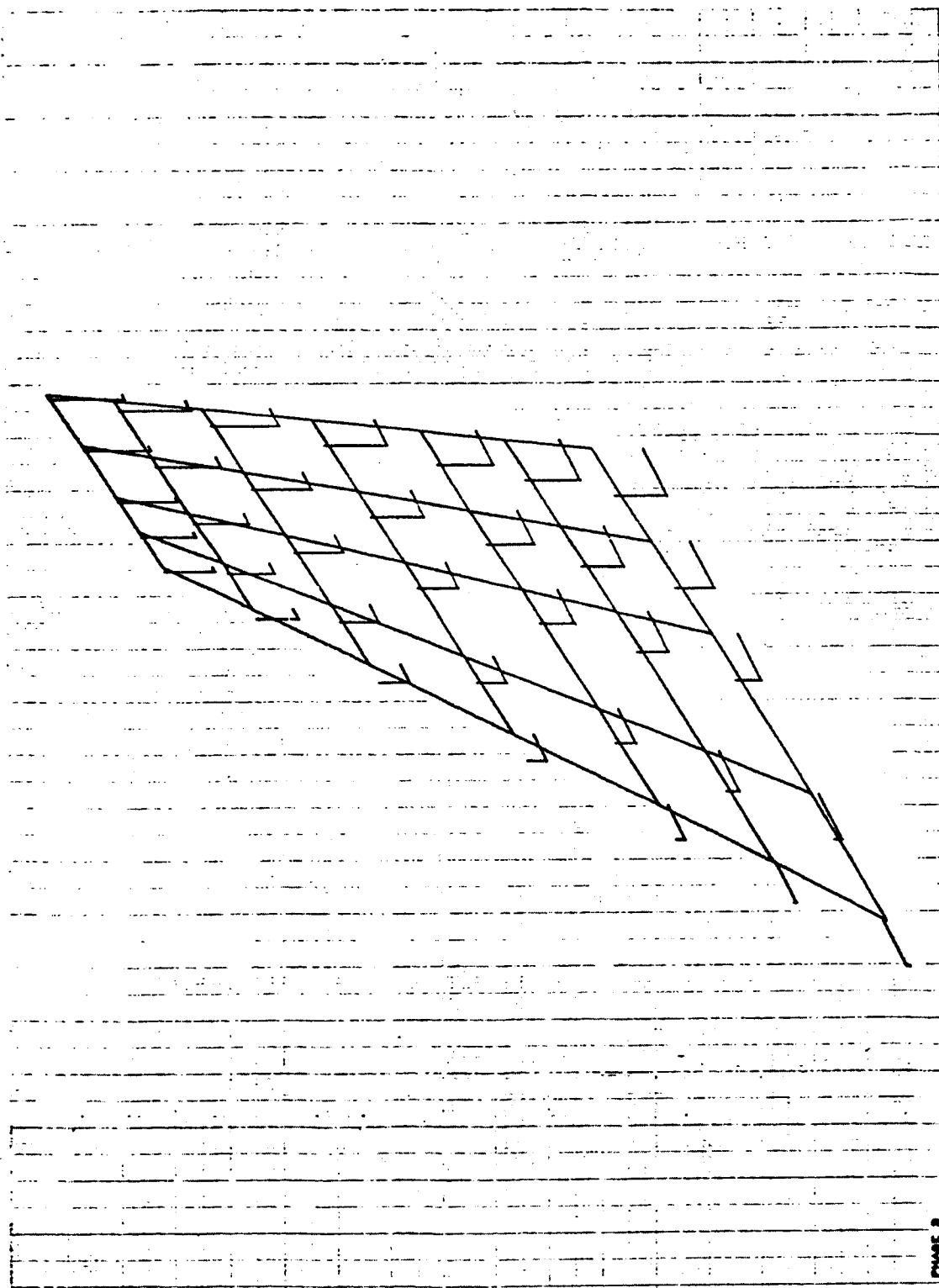
16

16 10/18/74 MM-007, = 0.011049



PHASE 3  
FIN-8704 (WITH SPRINGS)  
CRITER FREE MODES  
MODAL DEFORM. SURFACE 16 MODE 16 FREQ. 130.2633

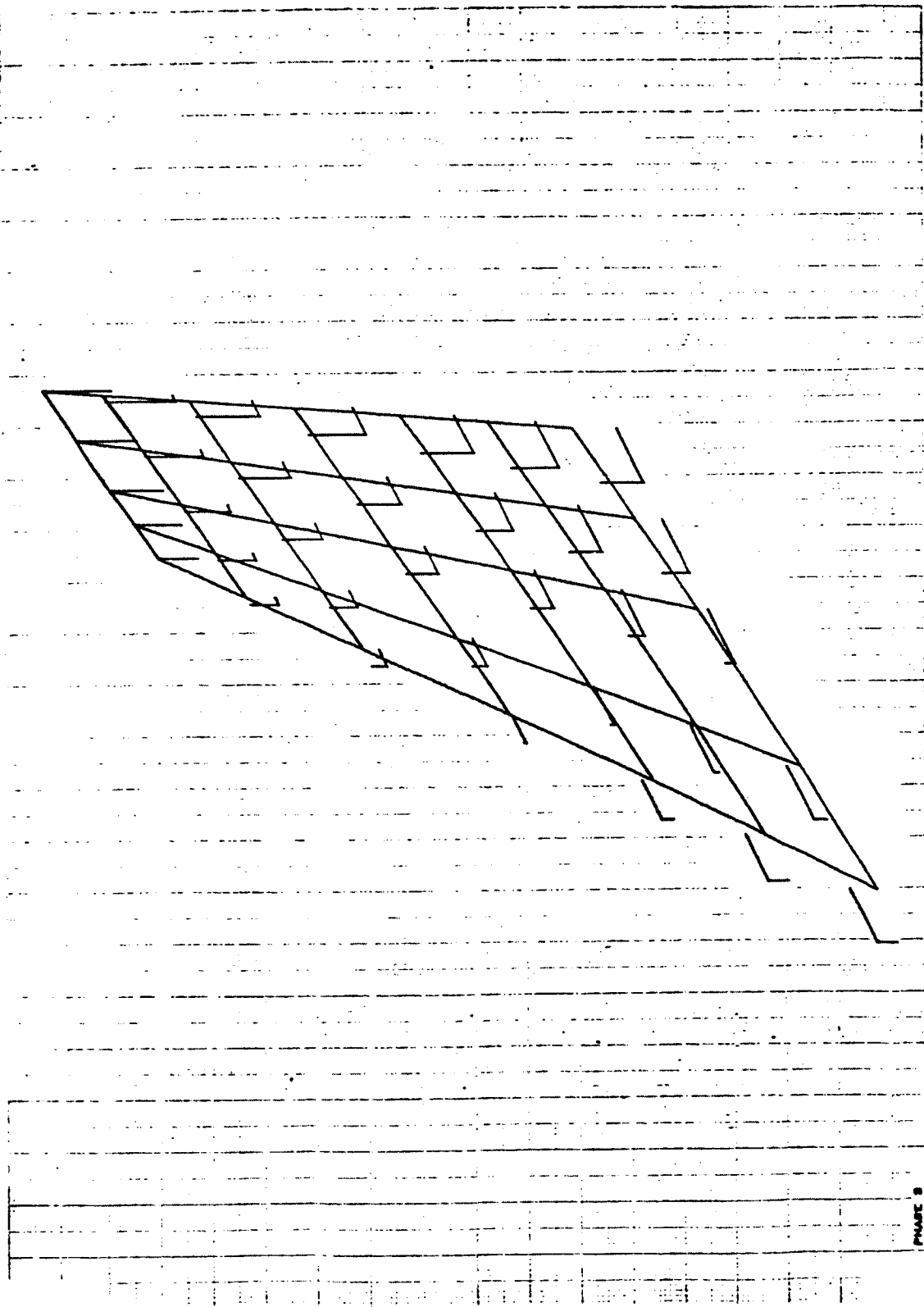
17 10/12/74 1000-000, 0.0000000



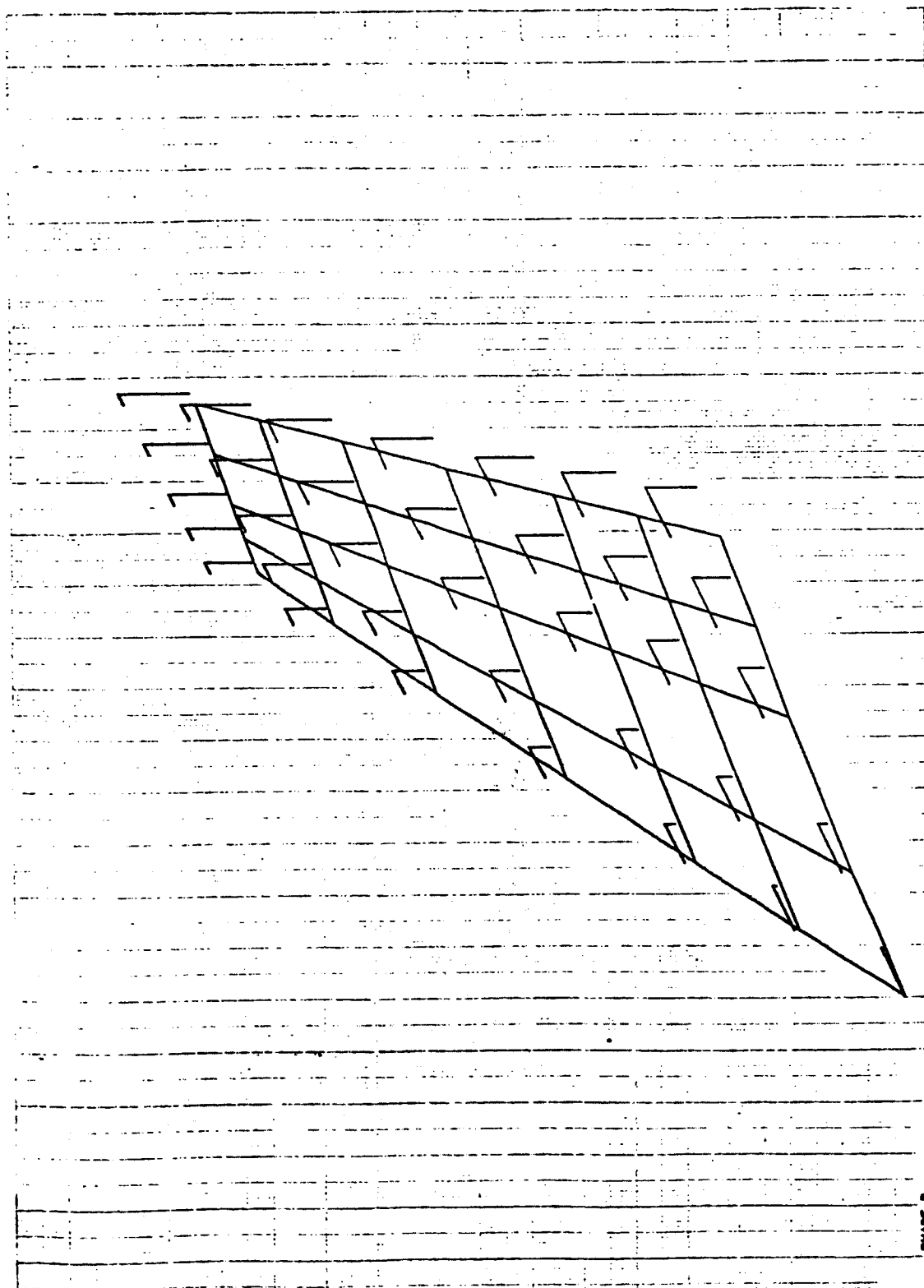
PHASE 3  
FIN-STRAN WITH SPRING  
ORBITER FREE FREE MODES  
MODAL DEFOR. SUBCASE 17

MODE 17 FREQ. 142.1388

10/19/74 MAX-DEF. = 0.0134431



PHASE 3  
FIN-STRIP (WITH SPRINGS)  
ORBITER FREE FREE MODES  
MODAL DETER. SURFACE 10 MODE 10 FREQ. 189.8309

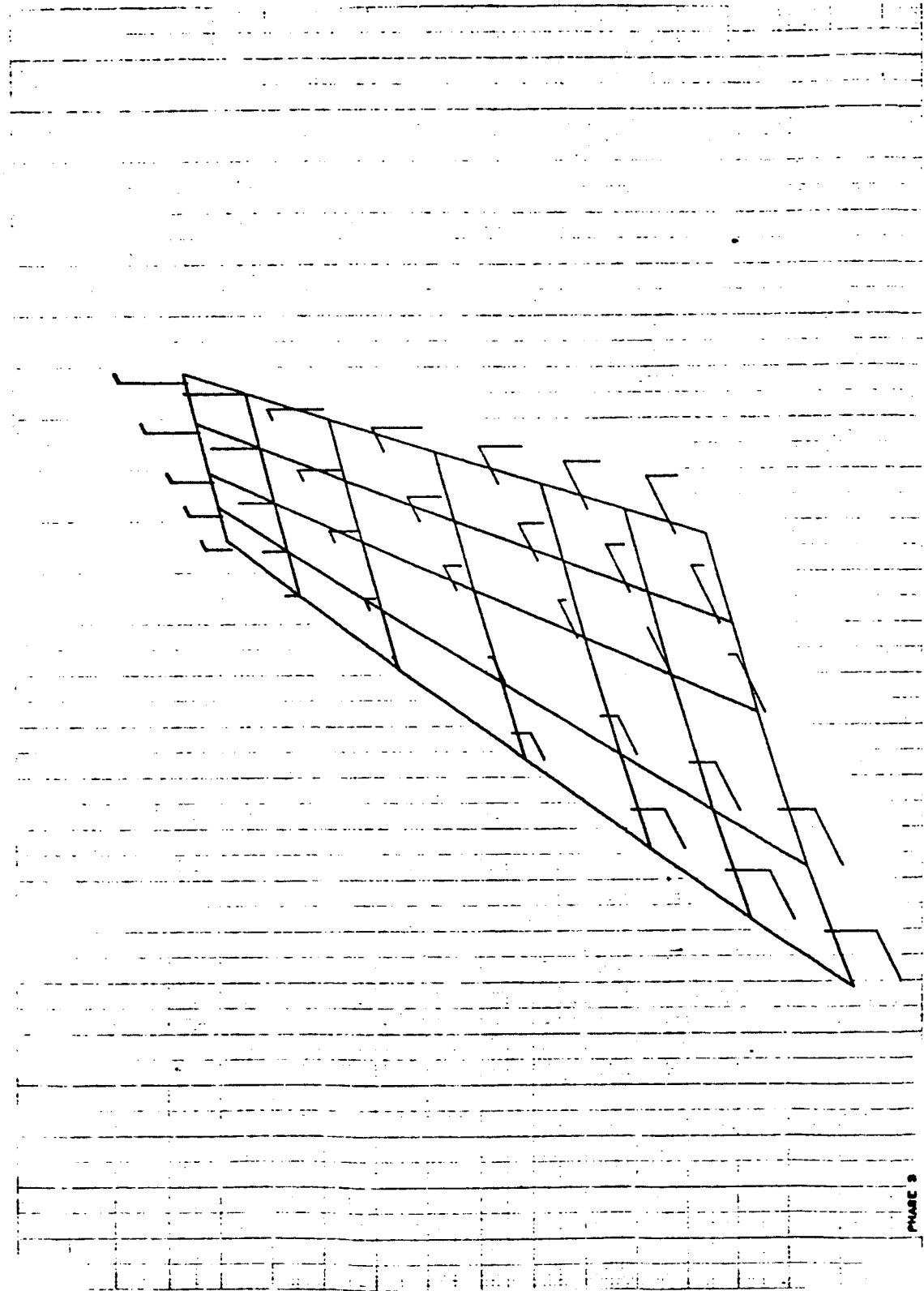


PHASE 2  
FIN-8704 (WITH SPRINGS)  
ORBITER FREE FREE MODES  
MODAL ORDER SURFACE 19

MODE 19 FREQ. 166.3038

200

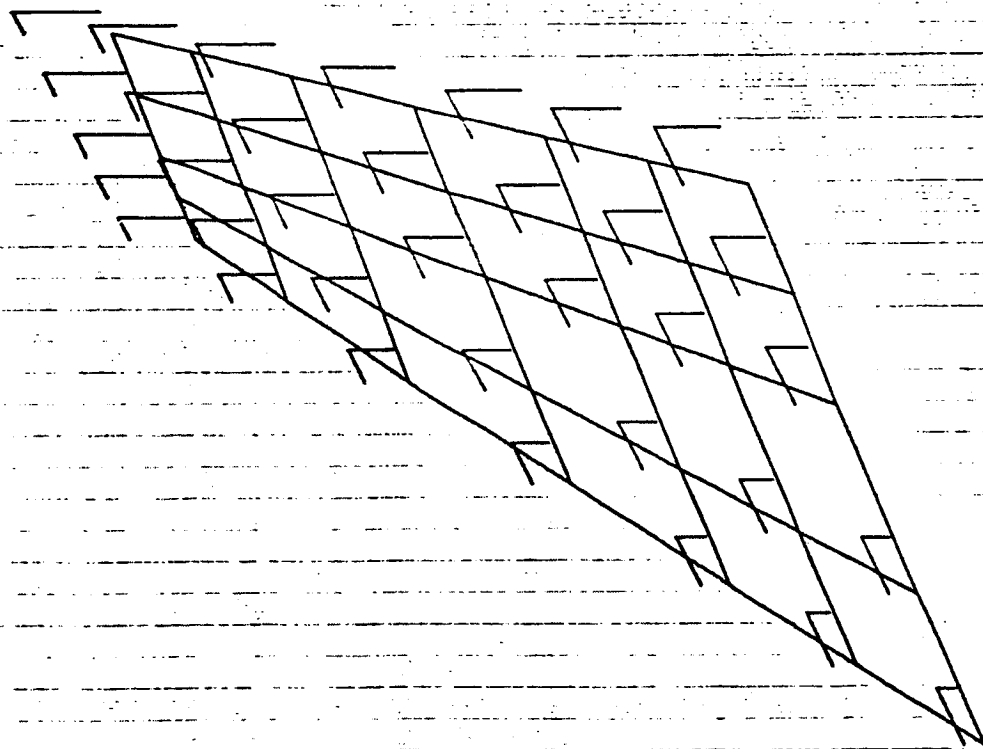
20 10/10/74 1000-0000 - 0.24000000



PHASE 3  
FIN-STRUT WITH SPRINGS  
ORBITER FREE FREE MODES  
MODAL DEFOR. SUBCASE 20

MODE 20 FREQ. 171.7384

21 10/18/74 1001-007. = 0.1004000



PHASE 8  
 FIN-8YAM QITH 8P8(1000)  
 ORBITER FREE FREE MOORE  
 MOVAL DETON, SUBCASE 21

MOORE 21 FREQ. 100.4840



1. The first step in the process is to identify the problem or issue that needs to be addressed. This involves gathering information and understanding the context of the problem.

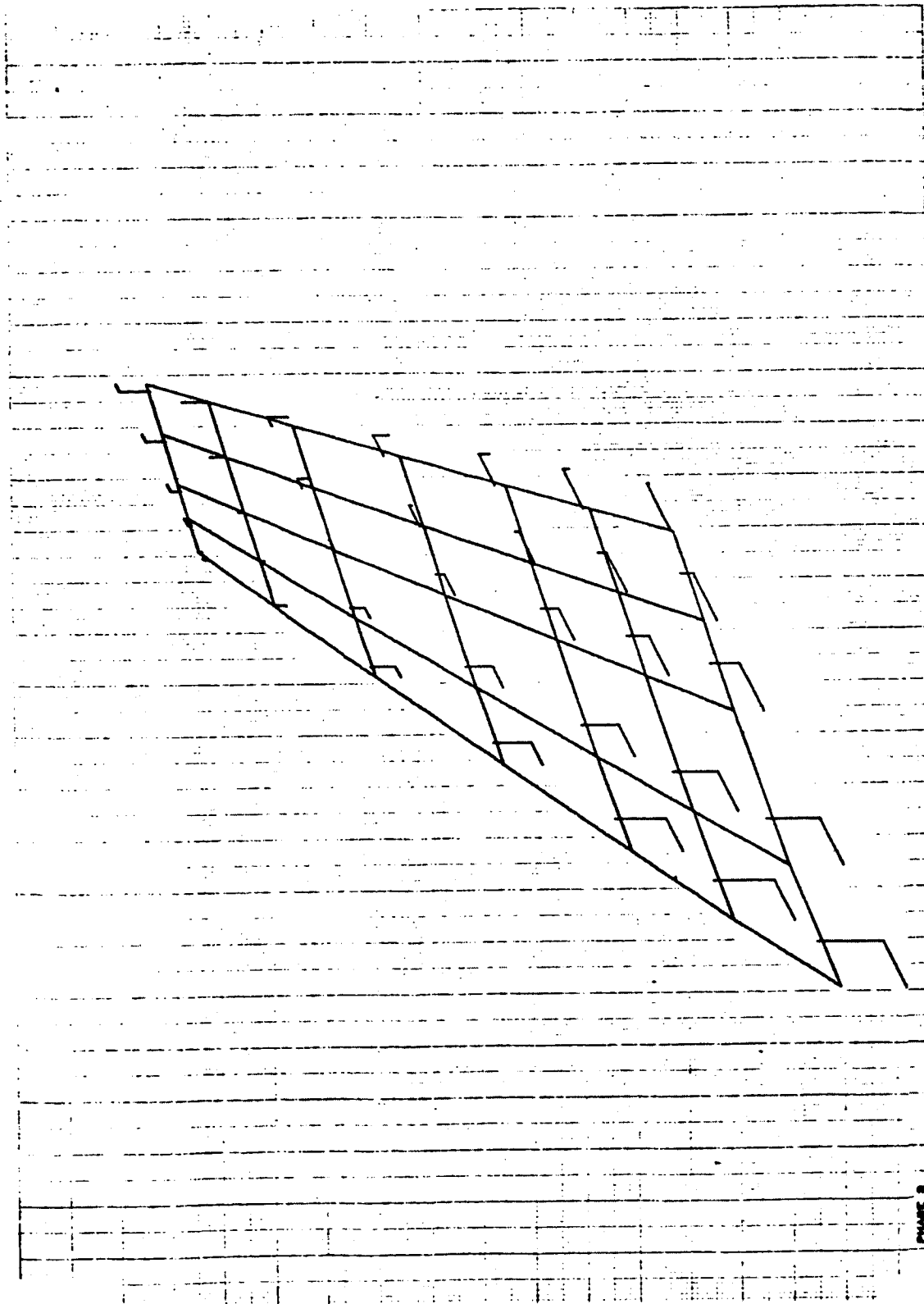
2. Once the problem is identified, the next step is to define the objectives and goals of the project. This helps to clarify what needs to be achieved and provides a clear direction for the team.

3. The third step is to develop a plan or strategy to address the problem. This involves breaking down the problem into smaller, manageable tasks and determining the resources needed to complete each task.

4. The fourth step is to implement the plan. This involves putting the strategy into action and monitoring progress to ensure that the project is on track.

5. The final step is to evaluate the results of the project. This involves assessing the outcomes against the objectives and goals and identifying any areas for improvement.

20 10/10/74 MMW-027, a O. 00000102



PHASE 3  
FIN-5744 (WITH 0001000)  
COSTER PRICE PRICE 40000  
MODAL DEFOR, SURFACE 25

MODE 25 FREQ. 224.0074

**Appendix B18**  
**INPUT & PLOTS/PHASE 3 ANALYSIS: MODEL II PAYLOAD**  
**SYMMETRIC FREE-FREE ORBITER MODES**

CASE CONTROL DESIGN

CARL  
CLUNT

2

THE UNIVERSITY OF CHICAGO

500-CA-71 " 1968-1972 F-101 F-101 MOD 5  
C-101

100

110 100 90 80 70 60 50 40 30 20 10 0

ALL INFORMATION CONTAINED  
HEREIN IS UNCLASSIFIED

ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED

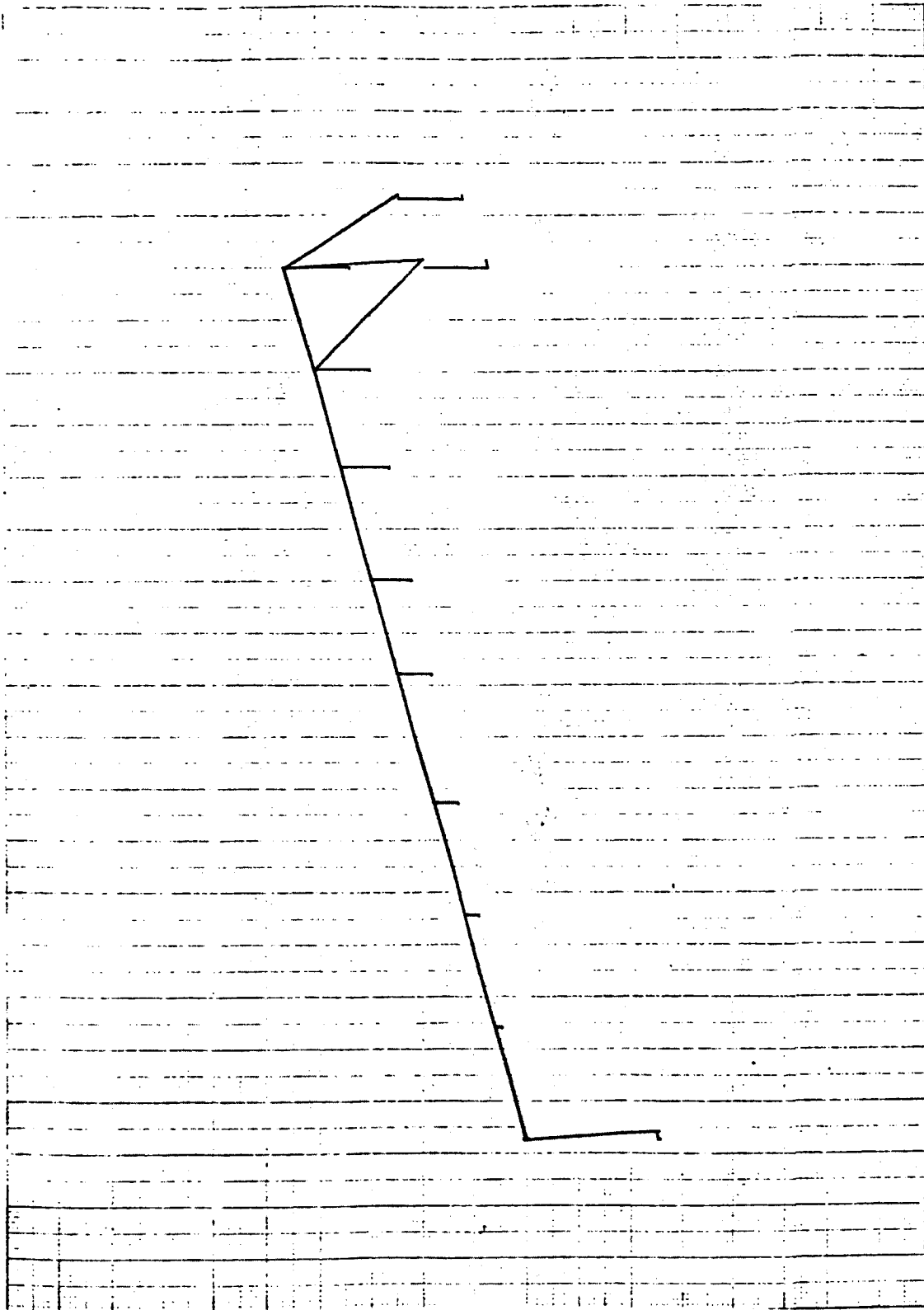
[illegible]

0-9 11 178 118  
0-9 11 178 118

PA1119 17JAN16Z C.A.1JSP2

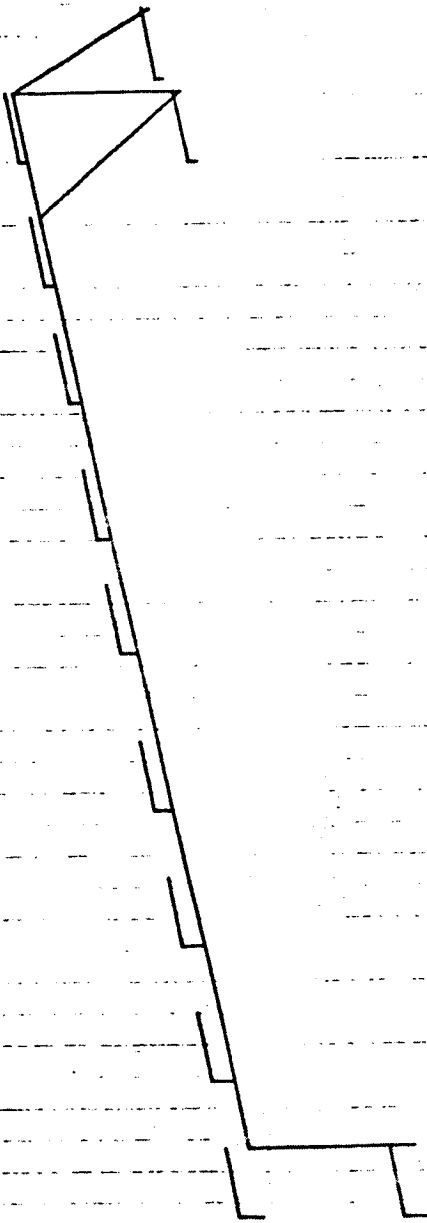
END DATA

12/15/74 001-007, - 0.70114576

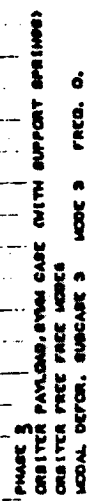


PHASE 3  
CRITER PAYLOAD, STAN CASE (WITH SUPPORT SPRINGS)  
CRITER FREE FREE MODES  
MODAL DEFOR. SUBCASE 1 MODE 1 FREQ. 0.

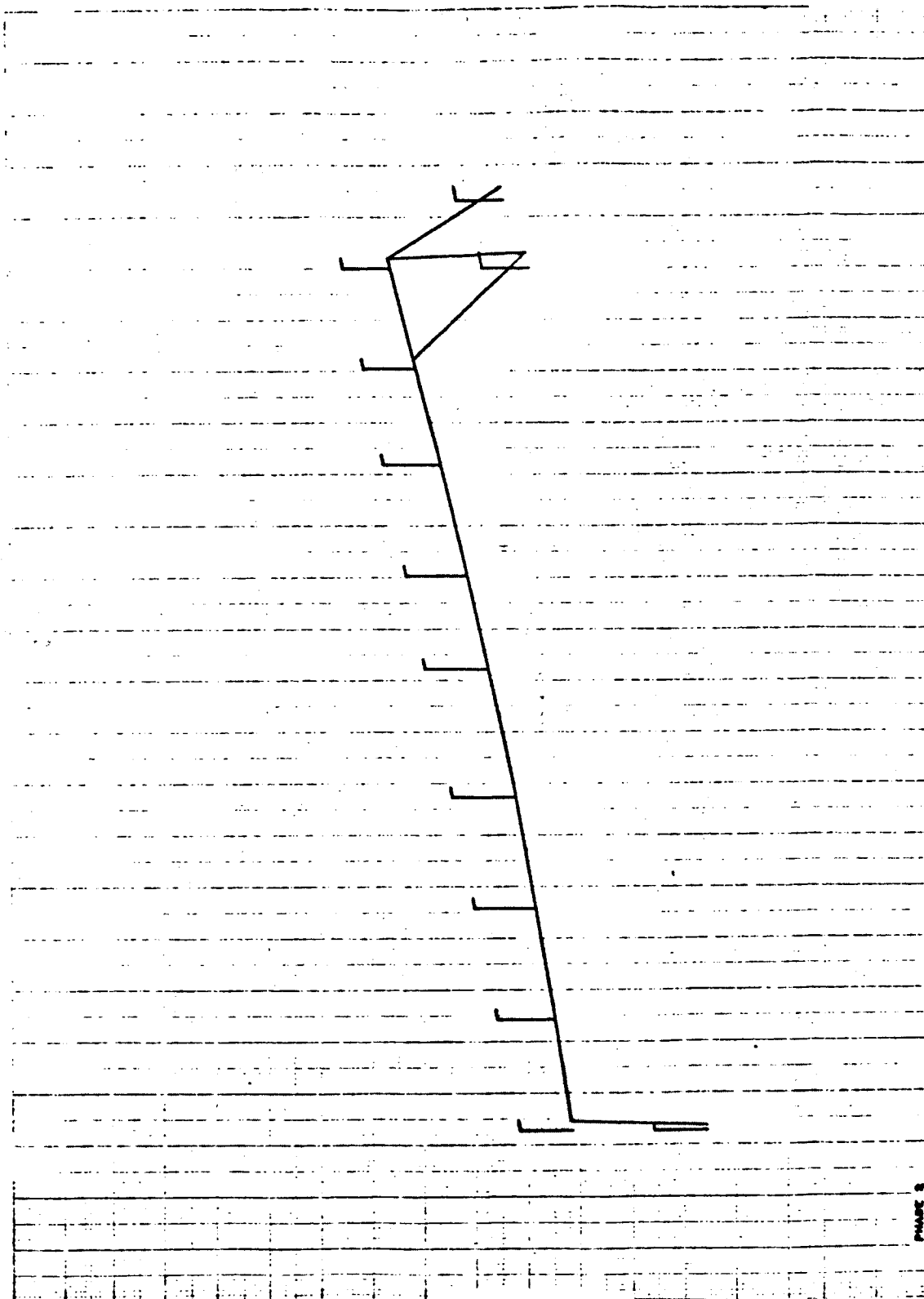
2 10/18/74 1001-007, 0 0, 40100000



1001-007, 0 0, 40100000



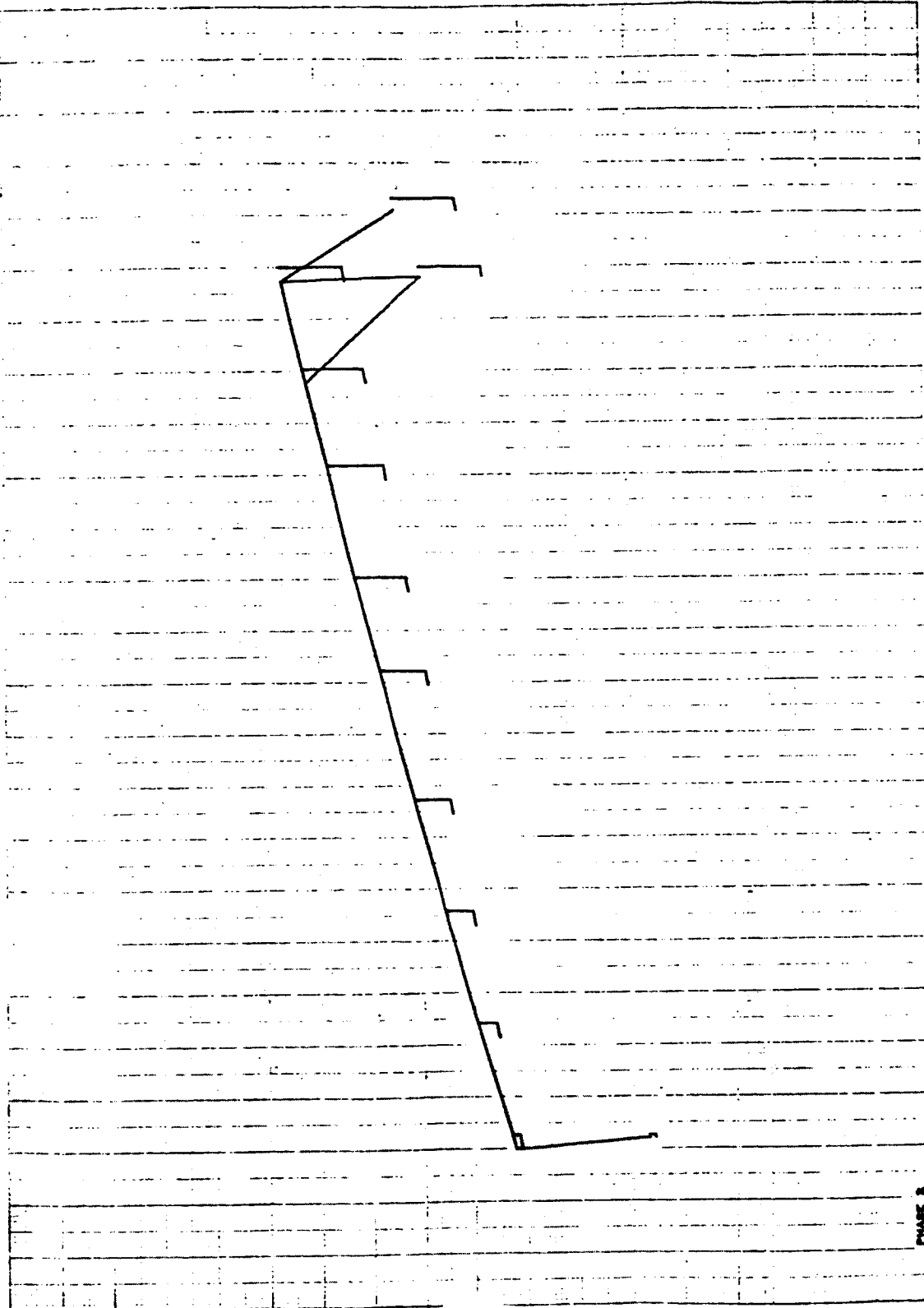
10/19/74 MAX-DET. = 0.00768100



PHASE 3  
ORBITER PAYLOAD, SYSTEM CASE WITH SUPPORT SPRING  
ORBITER FREE FALL MODE  
MAX DETOR, SURFACE 4 MODE 4 FREQ. 44.11571

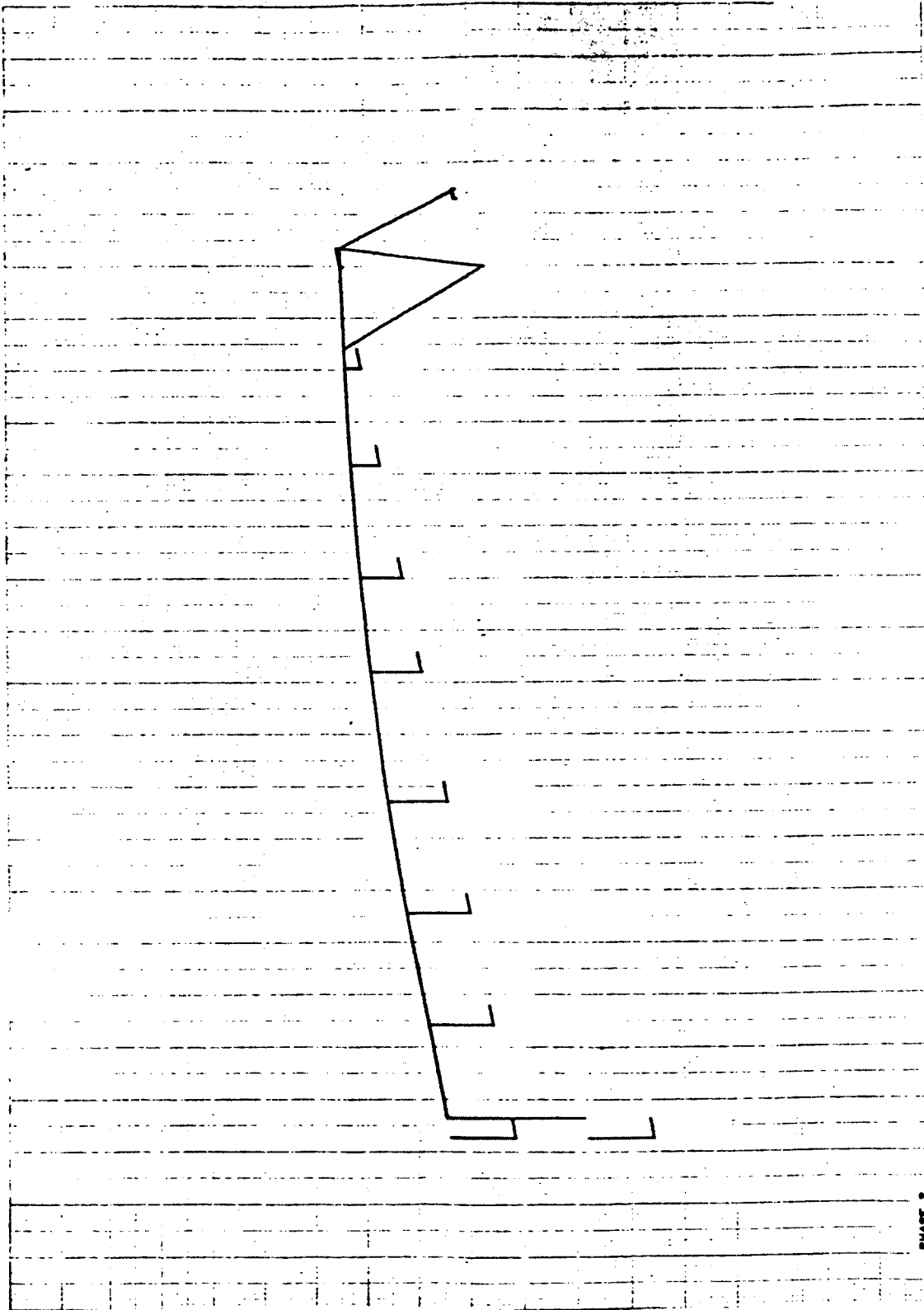


10/18/74 MW-007, S. 0.0010172



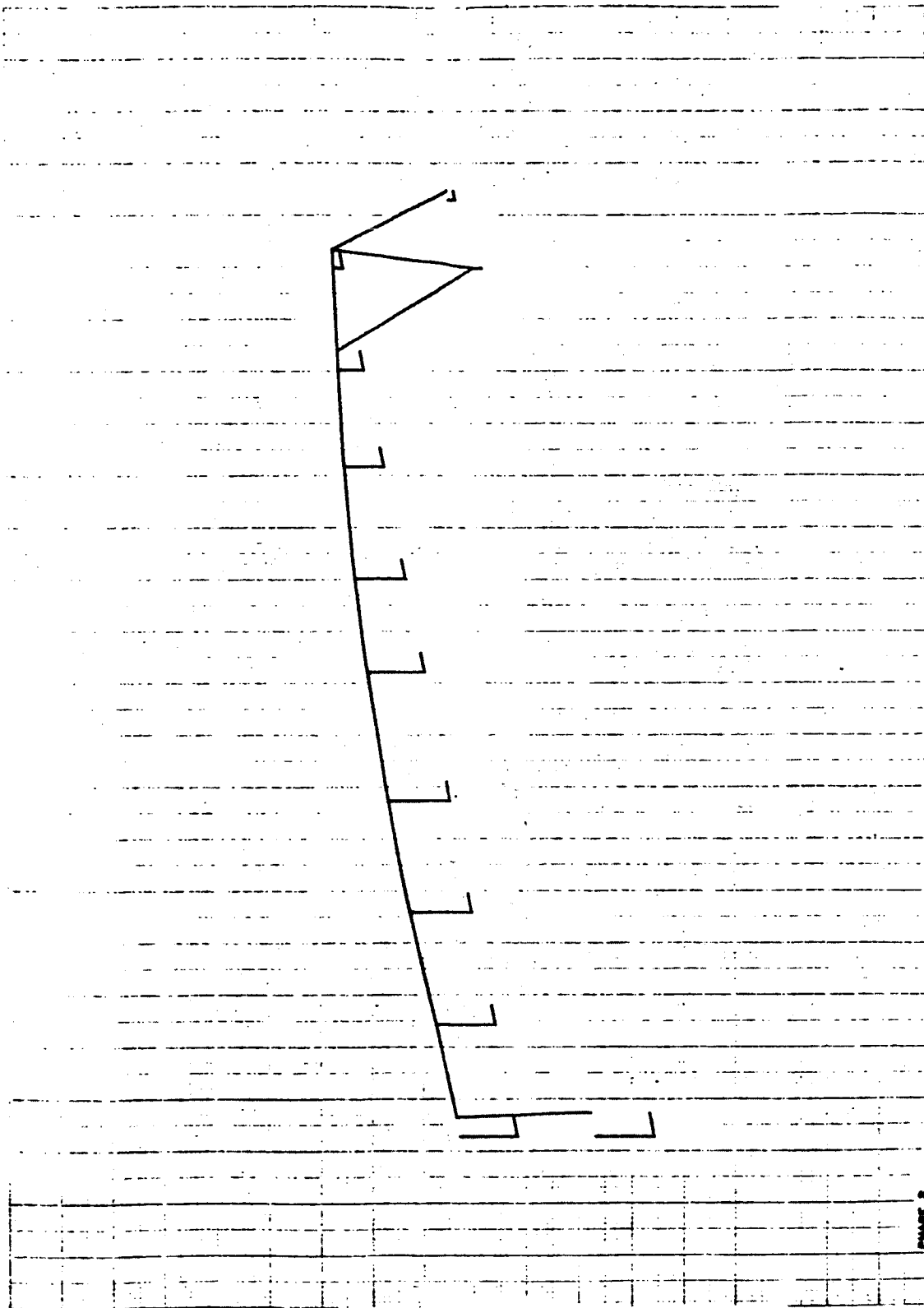
PHASE 3  
CRITTER PAYLOAD, 2000 GALS WITH SUPPORT SPRINGS  
CRITTER FREE FREE MOVES  
MODAL DEFOR. SUBCASE 8 MODE 8 FREQ. 45.33540

10/18/74 MAX-007. • 0.08418540



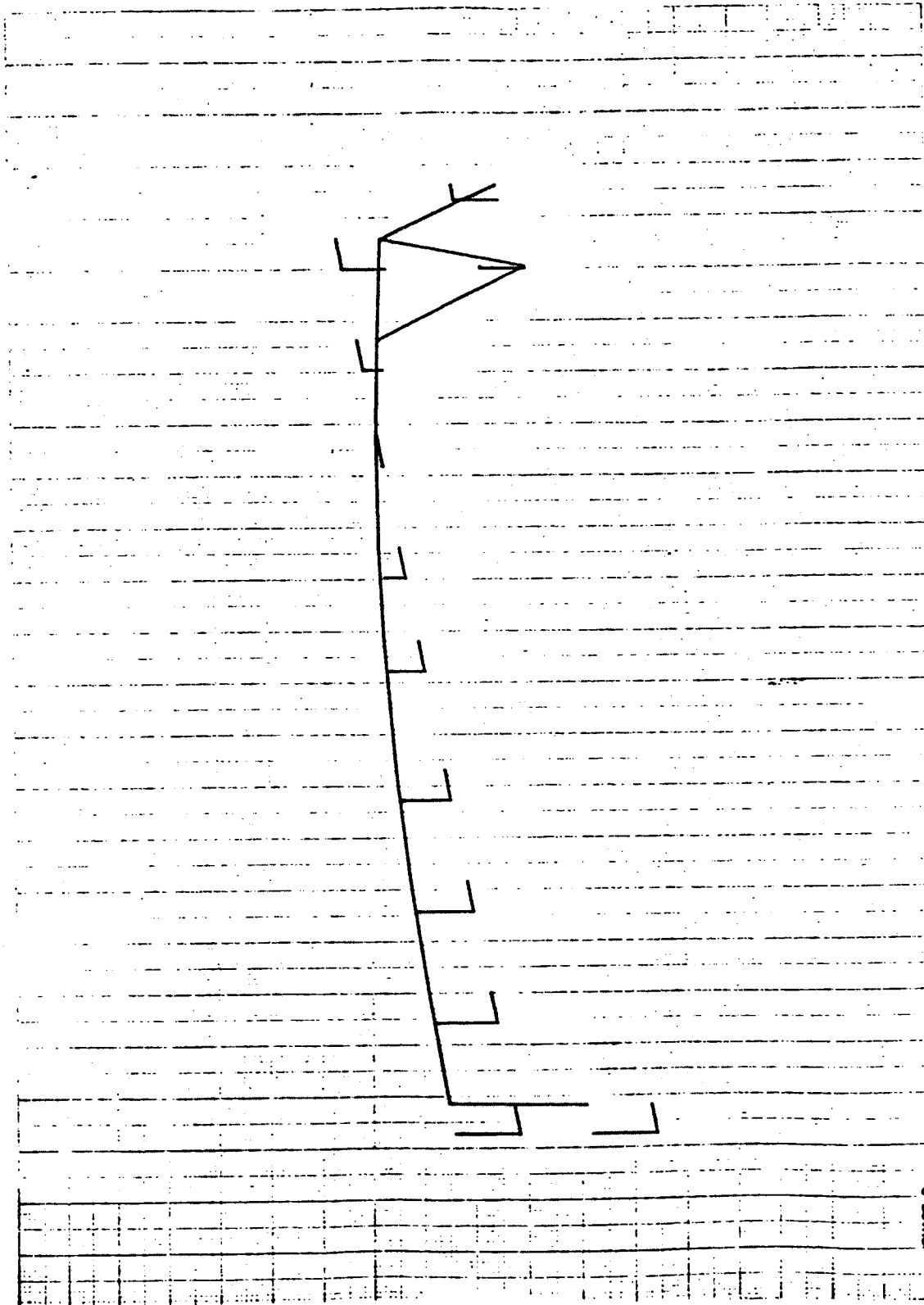
PHASE 3  
UNITER PAYLOAD/STAGE CASE (WITH SUPPORT SPRING)  
UNITER FREE FREE NOTES  
MODAL DEFOR. SUSCASE 0 WIDE 0 FREQ. 81.20322

1 10/15/74 100-207, & 10,4007024



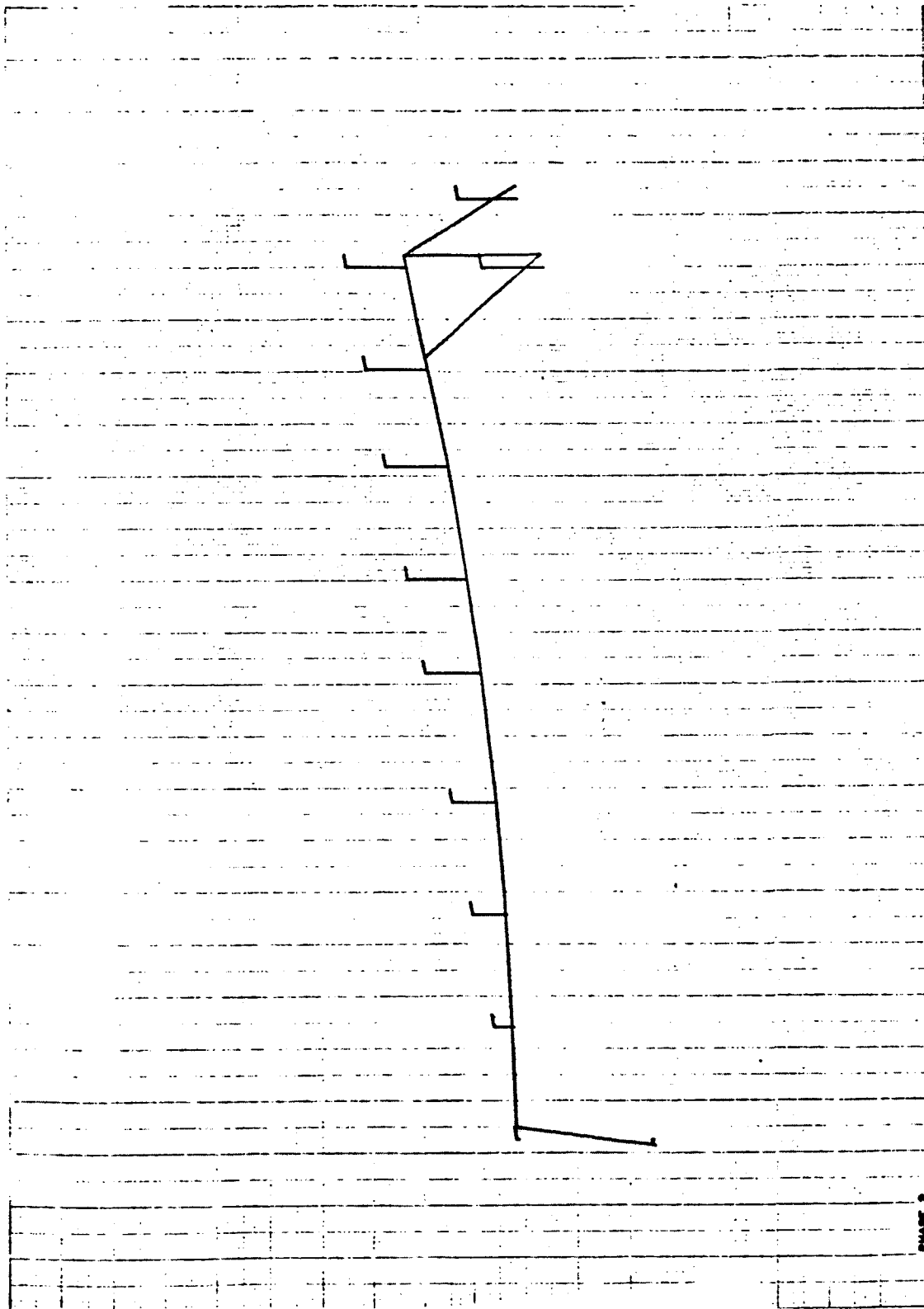
PHASE 3  
 ORBITER PAYLOAD, SYMM CASE (WITH SUPPORT SPRINGS)  
 ORBITER FREE FREE MODES  
 MODAL DEFOR. SURFACE 7 MODE 7 FREQ. 54.43372

10/18/74 1000-007, + 0.00000000



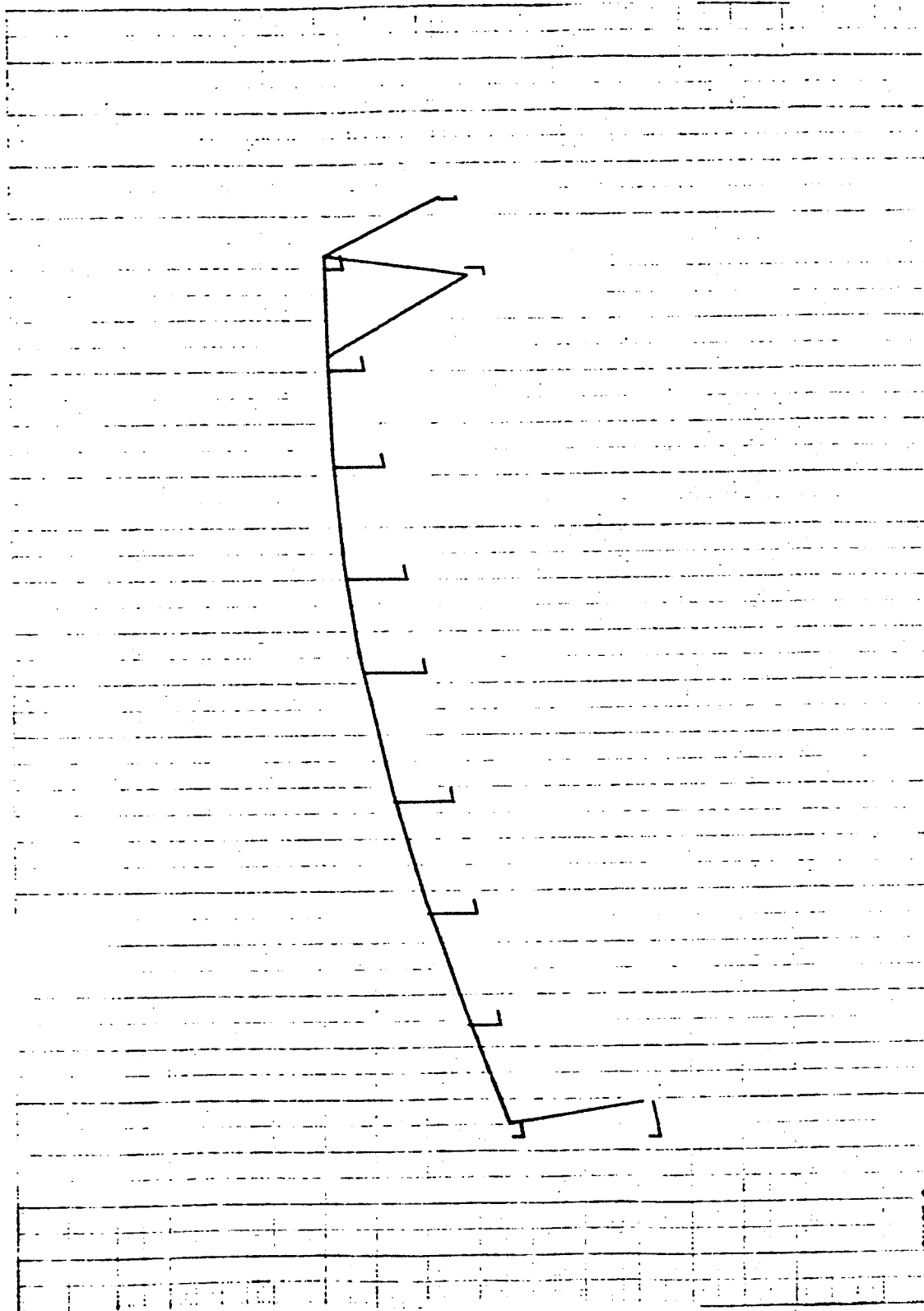
PHASE 3  
CRITTER PAYLOAD, 87000 CASE (WITH SUPPORT SPRING)  
CRITTER FREE FREE MODES  
MODAL DETON. SUBCASE 8  
MODE 8  
FREQ. 92.71864

10/15/74 MW-027. = 0.00340117

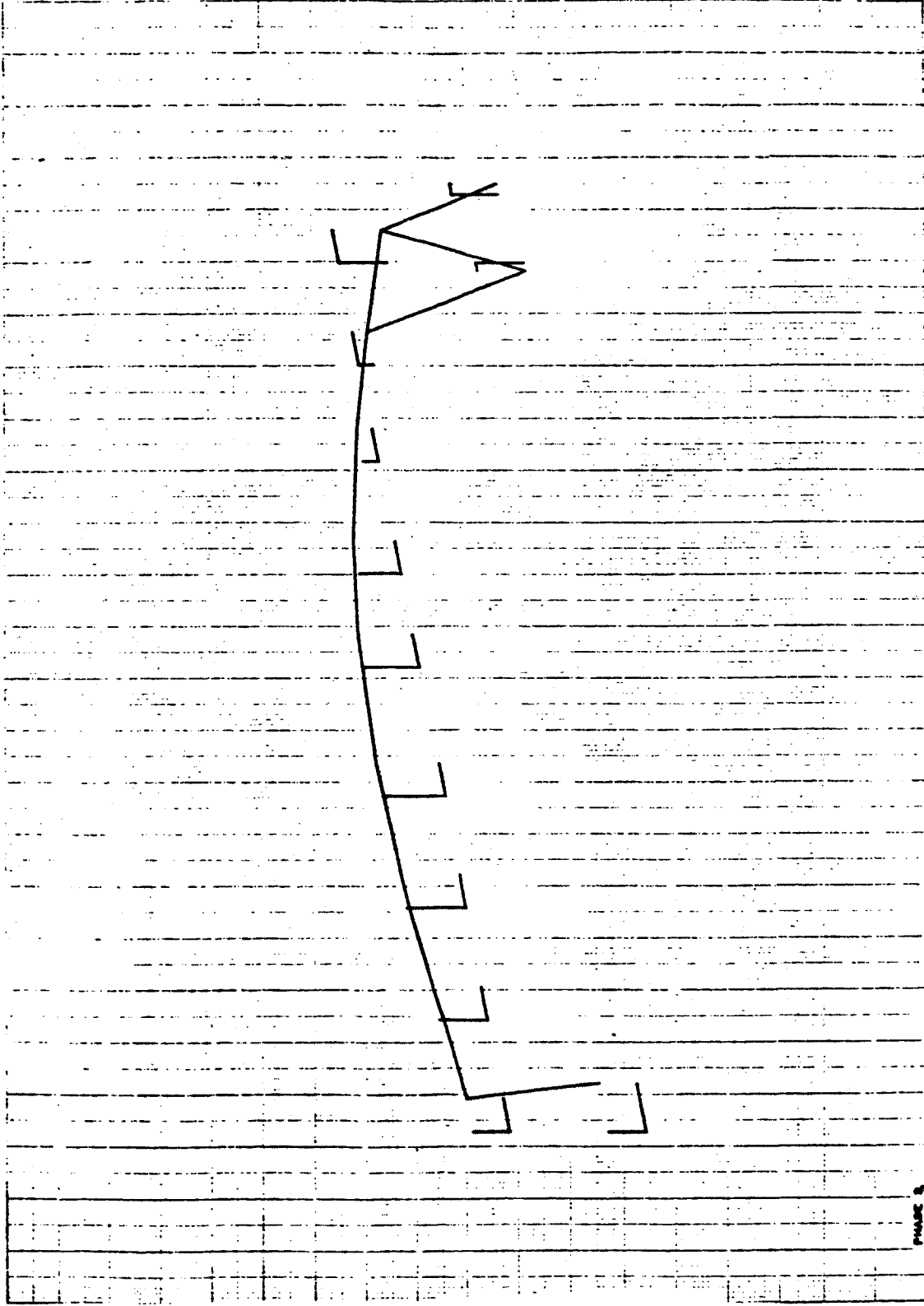


PHASE 3  
CRITER PAYLOAD, 87MM CASE WITH SUPPORT SPRINGS  
CRITER FACE FREE MOMES  
MODAL DEFOR. SUBCASE 1 MODC 1 FREQ. 66.86661

10 10101010 10101010 10101010

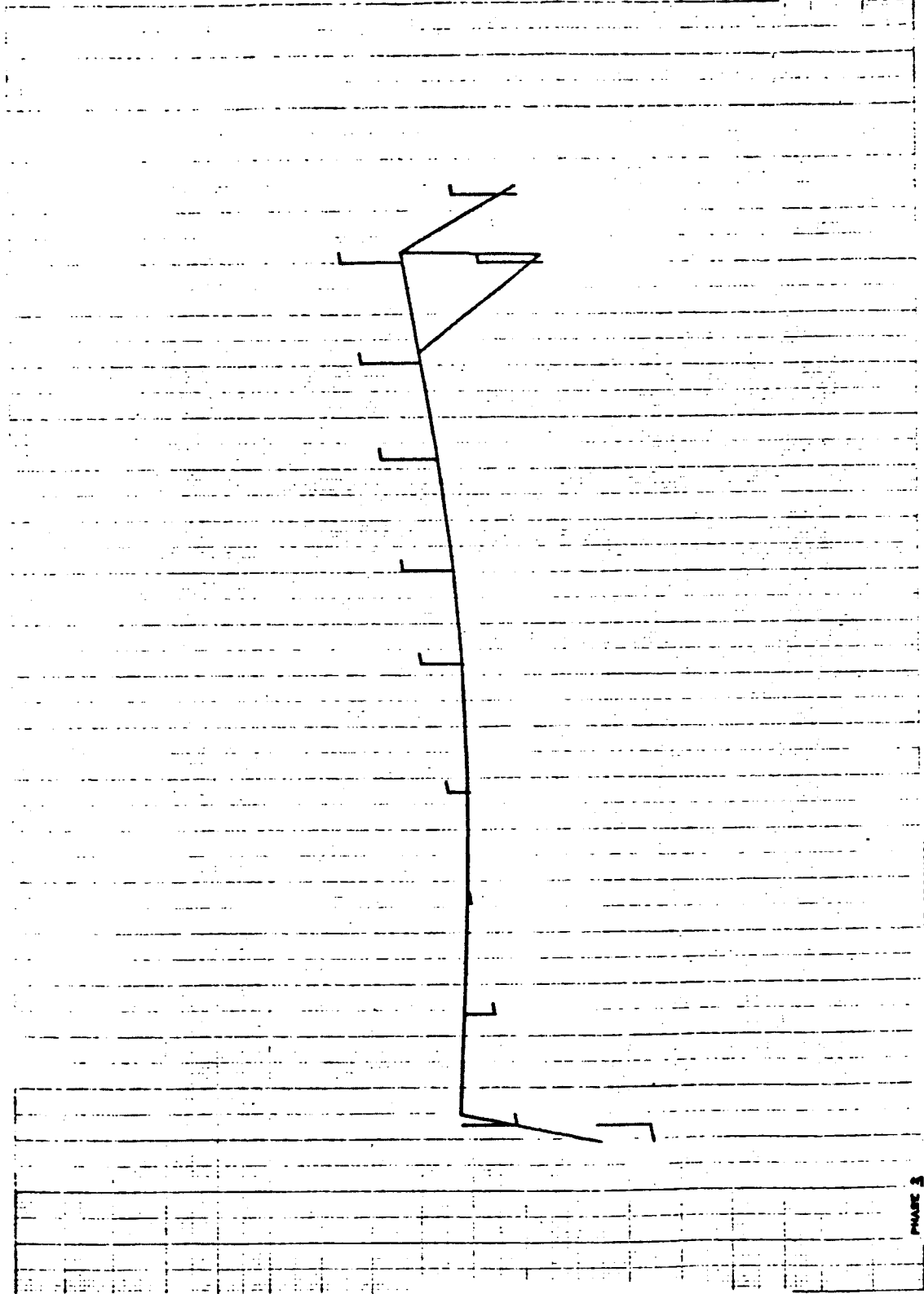


PHASE 3  
 ORBITER PAYLOAD, STAG CASE (WITH SUPPORT SPRINGS)  
 ORBITER FREE FREE MODES  
 MODAL DEFN. SURFACE 10 MODE 10 FREQ. 70.71846



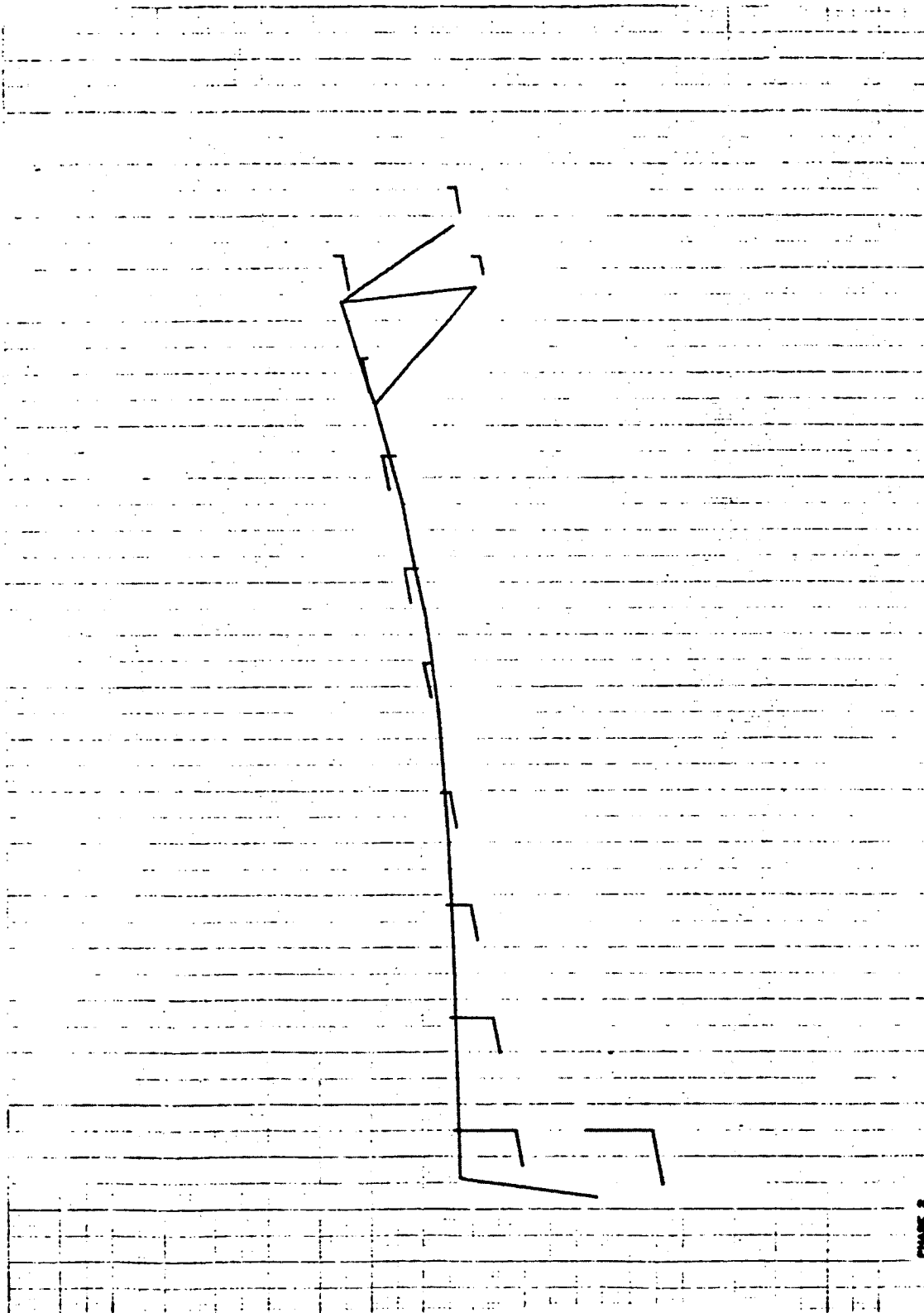
PHASE 3  
 CRITER PAYLOAD, 0000 CASE WITH SUPPORT SPRINGS  
 CRITER FREE FREE MOSES  
 MODAL DETER. SURFACE 11 MODE 11 FREQ. 89.1100

16 10101074 10101074 10101074



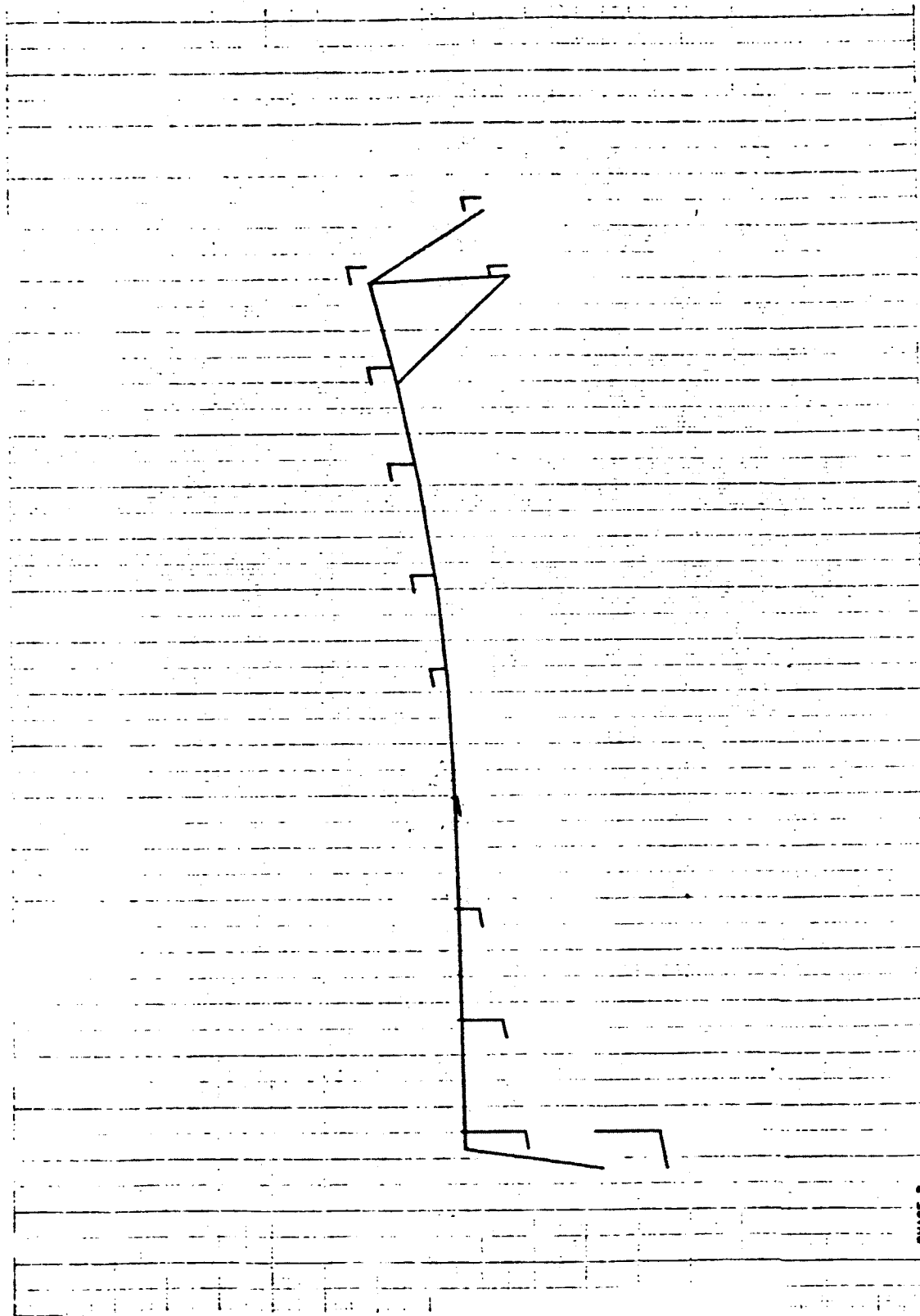
PHASE 3  
CRITTER PAYLOAD SYSTEM CASE (WITH SUPPORT SPRINGS)  
CRITTER FREE FREE MODES  
MODAL ORDER, SUBCASE 12 MODE 12 FREQ. 104.7641





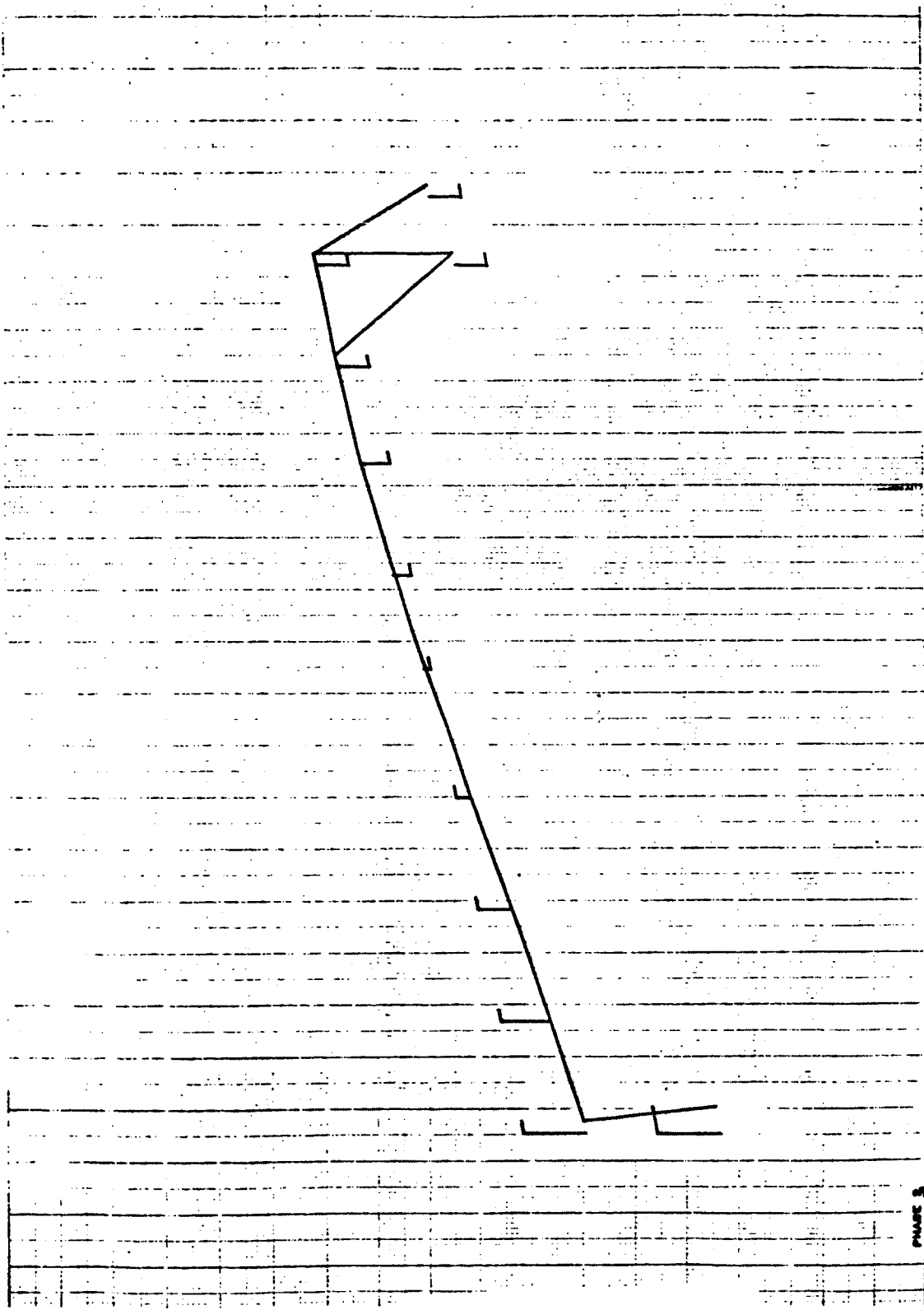
PHASE 3  
 CRITTER PAYLOADS, DYNA BARK (WITH SUPPORT SPRINGS)  
 CRITTER FREE FREE BARKS  
 LOCAL DEFER. SURFACE 13 MODE 13 FRAC. 118.8276

14 10/18/74 MAX-007. = 0.92497942



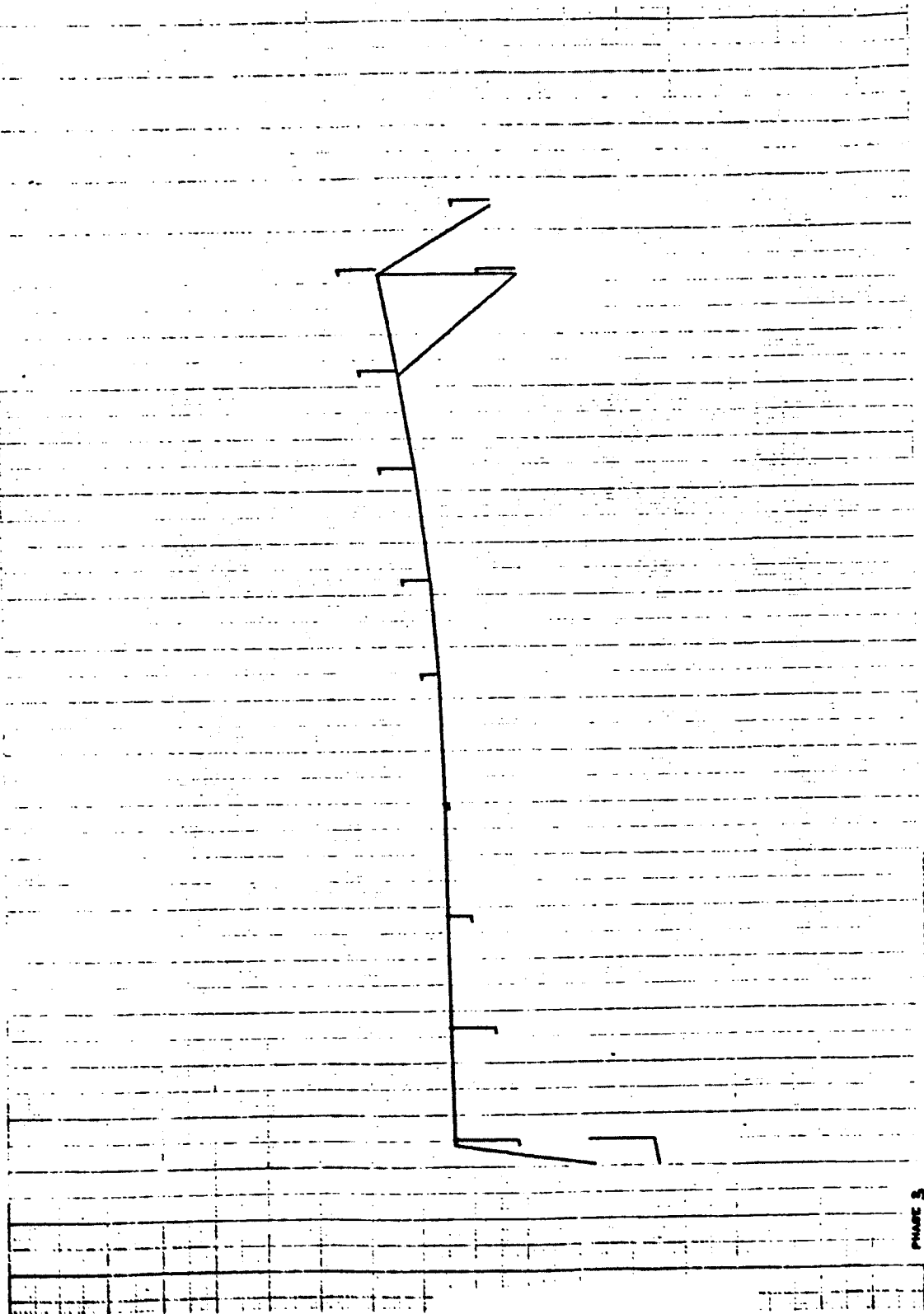
PHASE 3  
ORBITER PAYLOAD, SYMM CASE (WITH SUPPORT SPRINGS)  
ORBITER FREE FREE MODES  
MODAL DEFOR. SURCASE 14 MODE 14 FREQ. 128.2084

10 10/10/74 100-207, 0, 00000000



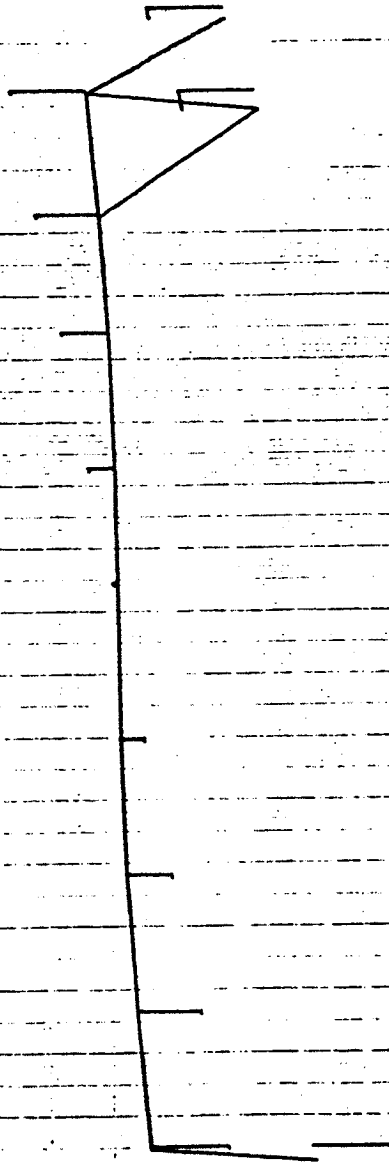
PHASE 3  
CIRCUIT PAYLOAD, STAN GAGE WITH SUPPORT SPRINGS  
CIRCUIT FREE FREE MEMO  
MODAL DEVER, SUBGASE 10 MODE 10 FREQ. 129, 4431

10/10/74 1000-007. - 0.04700074



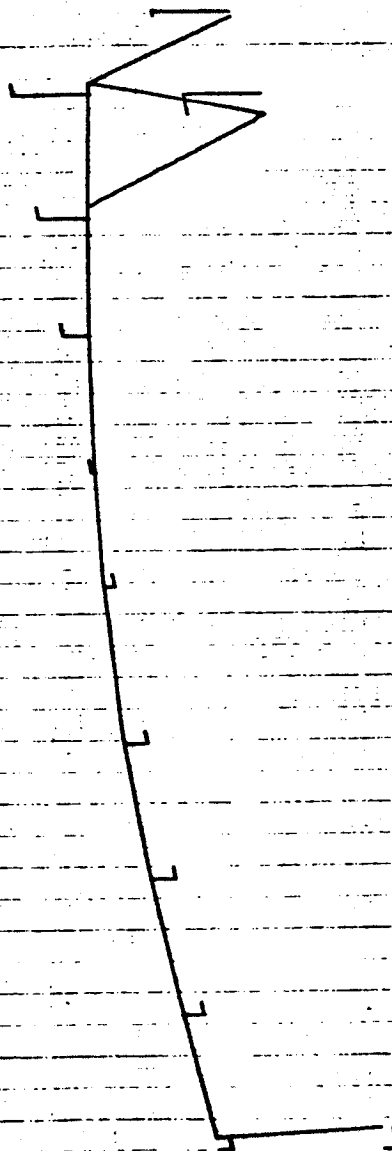
PHASE 3  
 ORBITER PAYLOAD, STIM CASE WITH SUPPORT SPRINGS  
 ORBITER FREE FREE MODES  
 MODAL DEFOR. SURFACE 10 MODE 10 FREQ. 120.2853

17 10/10/74 - MMT-007. = 0.1000000



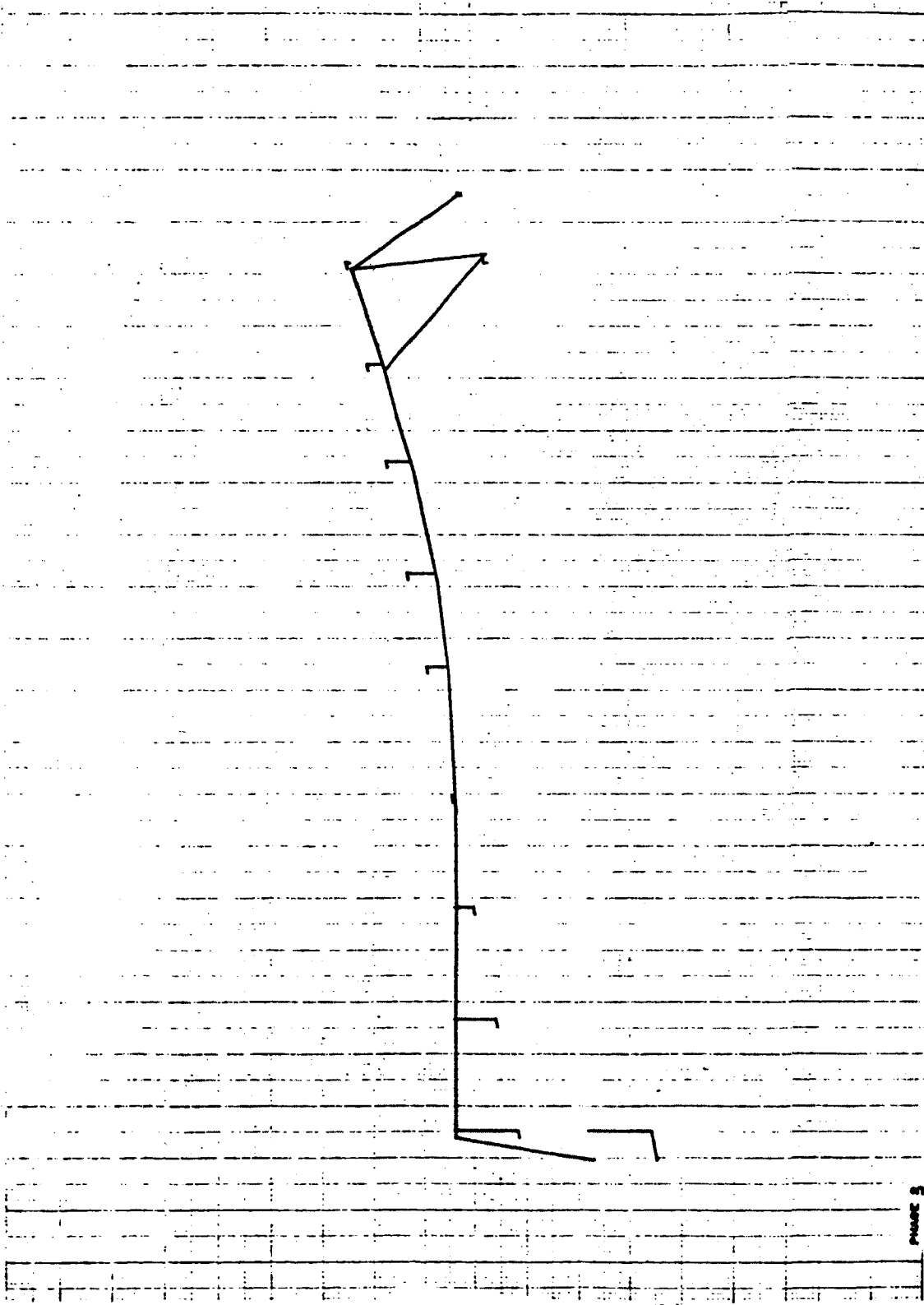
PHASE 2  
ORBITER PAYLOAD/STOW CASE (WITH SUPPORT SPRINGS)  
ORBITER FREE FREE MODES  
MODAL DEFOR. SURFACE 17 MODE 17 FREQ. 142.1300

10 10/10/74 1001-007, - 0.01001040



PHASE 3  
COSTLY PAYLOAD, SWAN CASE (WITH SUPPORT SPRINGS)  
COSTLY FREE FREE MODES  
MODAL DETON. BURCASE IS MODE IS FREQ. 189.8369

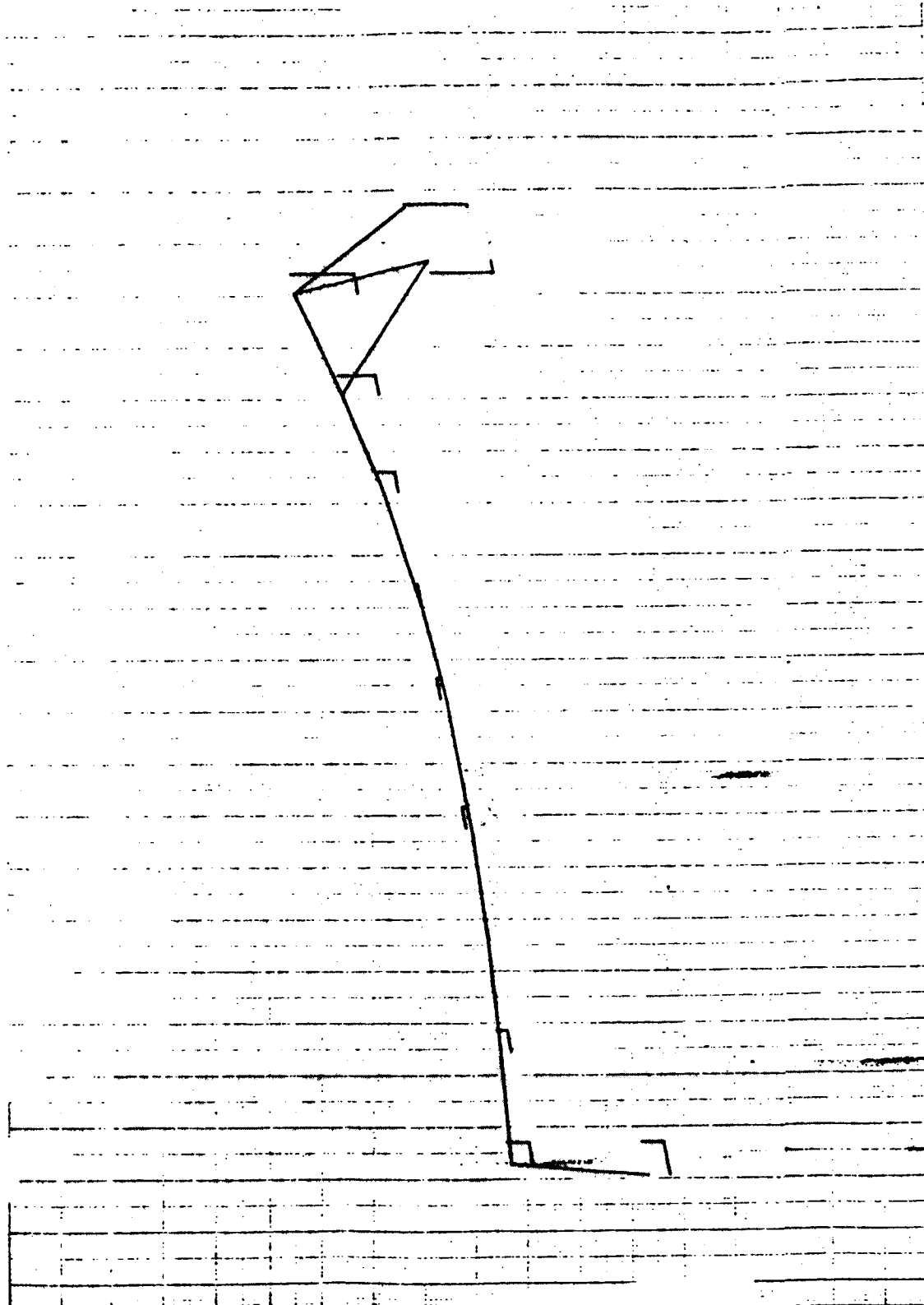
24



PHASE 3  
CRITTER PAYLOAD, SMALL CASE (WITH SUPPORT SPRINGS)  
CRITTER FREE FREE MORSE  
ACIAL OXTOR. SUBCASE 19 MODE 19 FREQ. 100.3002

20

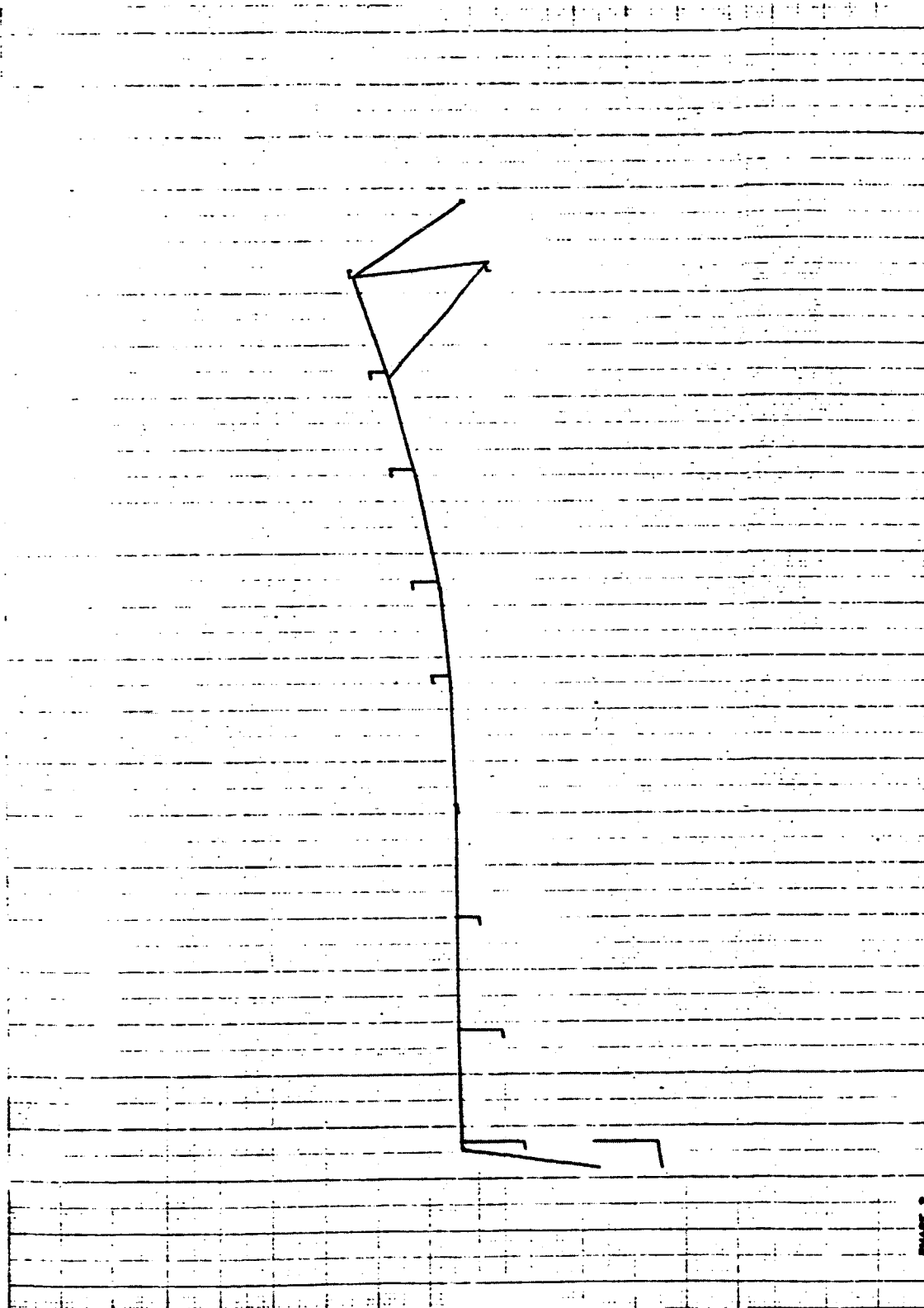
10/10/70 1000-0000 - 0.00000000



PHASE 5  
ORBITER PAYLOAD, STIM CASE WITH SUPPORT SPRINGS  
ORBITER FREE FREE MODES  
MODAL DEFORM. SUBCASE 20 MODE 20 FREQ. 171.7384

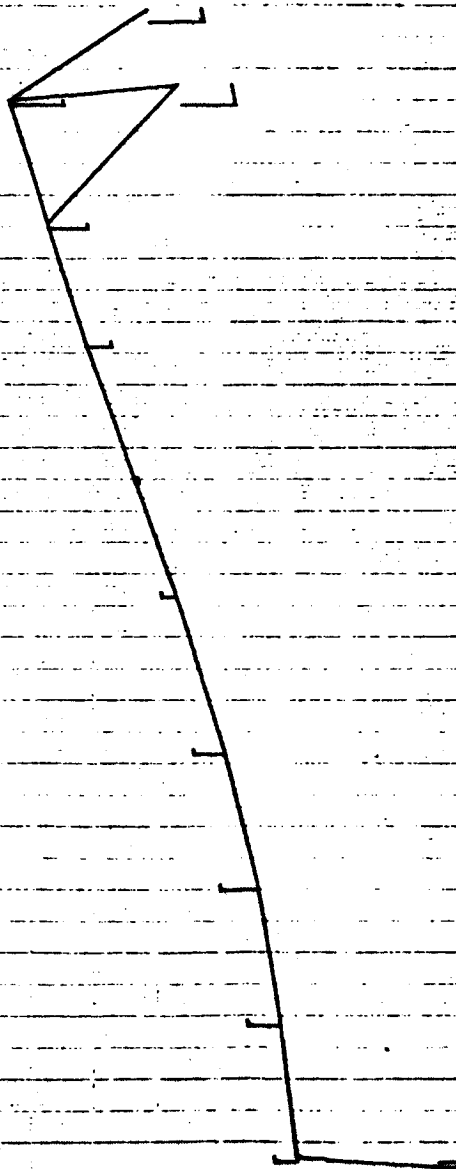


41 internal number: 0.000000



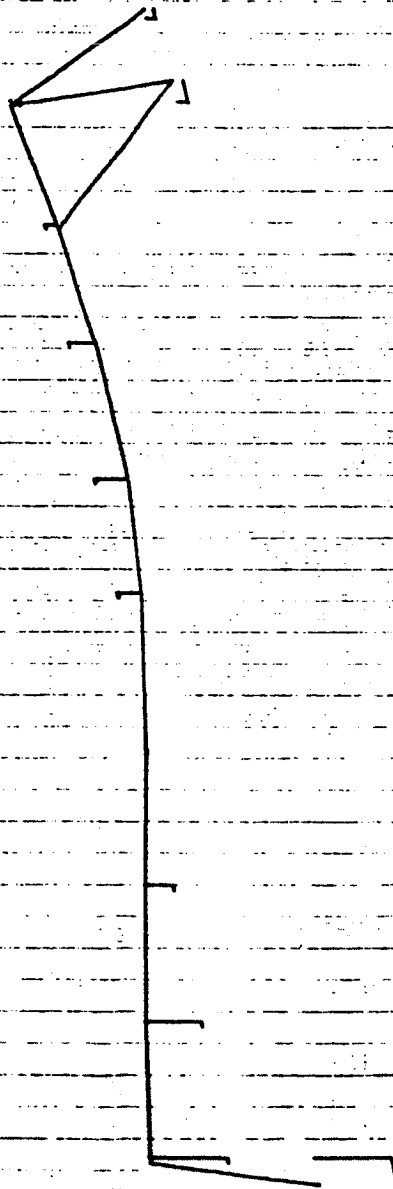
PHASE 3  
ORBITER PAYLOAD-ORBIT BASE WITH SUPPORT OF 10000  
ORBITER FIRST PERIODE  
MODAL ORBIT, SURNAME 21 MODE 21 PRCD. 100.0000

10/18/74 1000-007, 0. 00130221



PHASE 3  
CRIBTER PAYLOAD, SYM GARE (WITH SUPPORT SPRING)  
CRIBTER FREE FREE MODES  
MODAL DETOR. SURGARE 22 MODE 22 FREQ. 140.3289

28 10/18/74 MMW-007. • 0.0000000



PHASE 3  
CREDIT PAYLOAD FROM CASE (WITH SUPPORT SPRINGS)  
CREDIT FREE FREE HOOKS  
LOCAL OXYGEN, SURFACE 33 HOOK 23 FREQ. 224.0244